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ABSTRACT

This compilation of five newsletter issues focuses on potential developments and critical trends in higher education. It reports news from the social, technological, economic, environmental, and political sectors. It also includes a regular column titled "The Situation Room," a column on instructional tools, a column about Internet, and commentaries on higher education issues. Major articles include: "Educating a Constituency for the Long Haul" (David W. Orr); "Students As Major Players?" (Chris de Winter Hebron); "Preparing for the Twenty-First Century" (Paul M. Kennedy); "The Strategic Management of Higher Education: Lessons from Corporate Experience" (Ian Wilson); "The Information Revolution" (James Ogilvy); and "Education in the 21st Century" (James Ogilvy). (JDD)

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On the Horizon

the environmental scanning newsletter for leaders in education

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On the Horizon

[illegible] environmental scanning newsletter for leaders in higher education

October 1993 • Volume 2 Number 1

Educating a constituency for the long haul

David W. Orr, Chair
Department of Environmental Studies, Oberlin College

An odd alliance of rapacious corporations, right-wing extremists and aggrieved landowners are undermining good science and sound public policy in the cause of exploitation.

In *Earth in The Balance*, U.S. Vice President Al Gore proposes making the rescue of the environment the "central organizing principle for civilization" (1992, 269). Gore is effectively calling for a "Global Constituency for the Long Haul," one oriented to the health of the planet, with a decent regard for the rights and interests of future generations and a degree of self-denial quite unusual in an upstart species that still believes itself to be the master of all it surveys and deserving of all it can take.

That such a constituency is essential is clear enough, but it may never exist to the extent necessary to rescue the earth or, more to the point, to rescue humanity. It certainly will not be created easily or quickly. Aside from the possibility that evolution has made us much more adept at dealing with visible threats like marauding armies than with invisible ones measured in parts per billion or possibilities of future catastrophe (Ornstein & Ehrlich, 1989), there are other serious obstacles to the creation of any effective constituency.

First, every parent knows that it is much easier for a two-year old to make messes than it is to clean them up. The same is true in the realm of intellect and public policy: it is easier for demagogues to cast doubt, confuse, obfuscate, and muddy the water than to clarify complex issues.

In both cases, it takes far longer to clean up the mess than it did to make it in the first place.

Something like this is evident in recent efforts to render science subservient to politics, ideology, and even fantasy. The politicization of science is a growth industry. For example, radio and television talk show host Rush Limbaugh tells his listeners that ozone depletion is a fraud foisted on a gullible public by scientists wanting more research money. Limbaugh's views are a combination of scientific error and buccaneer capitalist ideology, magnified by an enlarged ego and the power of modern communications (Taubes, 1993). Trusting Mr. Limbaugh's facts and unwilling to investigate further, millions of listeners now believe that we need not worry about the effects of ozone depletion, climate change or any other environmental issue.

Mr. Limbaugh is not alone. An odd alliance of rapacious corporations, right-wing extremists, and aggrieved landowners are undermining good science and sound public policy in the cause of exploitation. With no detectable humor or irony, one such U.S. group calls itself the "Wise Use Movement." They are hard at work infiltrating public school boards, state legislatures, and corporate boardrooms.

A second and more pervasive barrier to the creation of a long-term constituency is the tendency to deny the seriousness of our situation. There is no honest way around the reality that the big numbers of population growth; the disruption of the earth's biogeochemical cycles; species extinction; and the health of soils, forests, and water are running against us. No one of these is necessarily fatal. Taken together, however, they point inescapably to the conclusion that we do not have much time to set things right. The momentum is sweeping us toward a precipice; but the words, concepts, and theories essential to comprehend our situation are not yet part of our political language or public mindset.

A third force working against us is the widespread belief that citizenship requires little or nothing of us. The idea of ***cheap citizenship*** is founded on the theology of the lottery: one reaps not what one sows. It follows that one need not sow at all and that reaping is a matter of luck, chicanery or happenstance, not hard work, skill and obligation. The mindset of cheap citizenship owes in part to decades of televised bamboozlement. It reflects the lingering effects of self-indulgences past, notably those of the 1980s. The idea that one can get something for nothing is built into the modern mind, which believes in nothing quite so zealously as it does in the heroic power of technology to absolve us of ecological malfeasance and ineptitude.

Recent congressional discussion on reducing the U.S. deficit provided a textbook study of cheap citizenship. All participants conceded the seriousness of the situation while professing the inability of their constituents to do anything about what caused the huge deficits. The philosophy of cheap citizenship likewise prevents any serious discussion of the full costs of what we consume, including the costs of biotic impoverishment.

Responsible citizens pay their bills, exercise foresight, assign costs and benefits fairly, work hard at maintaining their communities, and are willing to sacrifice when necessary and even consider sacrifice a privilege. Authentic citizenship—political and ecological—is not cheap, but sooner or later it proves less costly by far than derelict and counterfeit citizenship.

If the end of the world arrives anytime soon, it will be brought to us by all the major networks, each competing for the highest Nielsen ratings.

Fourth, the news media often works against the creation of a long-term constituency. In its quest for high ratings, television news, for example, has become little more than entertainment. If the end of the world arrives anytime soon, it will be brought to us by all the major networks, each competing for the highest Nielsen ratings. The sponsors will include many of the corporations whose activities made the event possible. We, the viewing public, instead of being sobered by the gravity of the impending catastrophe, will be dazzled by the graphics, amazed by the artistry, charmed by blow-dried reporters, and overcome by the spectacle of it all—entertained right into oblivion.

To entertain it is necessary to create conflict and dramatic tension, often where none exists. That is why E. O. Wilson's views on species extinction are often "balanced" by counter arguments of people such as economist Julian Simon, whose knowledge of the issue is vaporous. Similarly, recent reports of divergent opinions on trends in the earth's average temperature were made to appear as if scientists were in serious disagreement. Satellite recordings of temperatures four miles above the earth's surface reveal no upward trend, while ground temperatures (until the eruption of Mt. Pinatubo) show a sharp increase from 1980 through 1991. These are different, but not necessarily conflicting data. To the average reader however, the story gives yet one more reason to believe that scientists do not agree about global warming: hence one more reason to procrastinate (Rensberger, 1992). In the meantime real disagreements, including those about the larger risks and the ethics of our taking such risks, go largely unmentioned.

Upshot

The challenge for higher education is to educate a constituency willing and able to fight for long term human prospects. That constituency must be literate enough scientifically to recognize politicized science for what it is. It must be courageous enough to face facts squarely. It must be committed enough to avoid the seductions of cheap citizenship. It must be intellectually and politically alive enough to demand thoughtful analysis of public problems. This will require, in Paul Kennedy's words, "nothing less than the re-education of humanity" (Kennedy, 1993, p. 331).

There's the rub. What are schools, colleges, and universities doing to reeducate the citizenry, or for that matter, their own faculty, administrations, and trustees? The short answer is "not nearly enough," and in most cases "nothing at all." Even in this time of ecological concern, high schools, colleges, and universities continue to turn out a large percentage of graduates with no clue of how their personal prospects are intertwined with the vital signs of the earth. Dartmouth College Professor Noel Perrin calls it a failure of leadership: "Neither the trustees nor the administration [of this or any other college or university] seems to believe that a crisis is coming" (Perrin, 1992, p. B-3). They comprehend the situation intellectually, Perrin believes, but they do not yet feel it at gut level, where action begins. Yale University historian Yaroslav Pelikan similarly questions the

> readiness of the university community to address the underlying intellectual issues and moral imperatives of having responsibility for the earth, and [whether it is possible] to do so with an intensity and ingenuity matching that shown by previous generations in obeying the command to have dominion of the planet (Pelikan, 1992, p. 21).

Among those familiar with higher education, few would disagree with such skepticism. But this is an opportune time to make ecological literacy central to the debate now underway about educational goals and standards. That debate should be informed by recognition that environmental education is not the same kind of education that enabled us to industrialize the earth, only better. On the contrary, the kind of education we need begins with recognition that the crisis of global ecology is first-and-foremost a crisis of values, ideas, perspectives, and knowledge—which makes it a crisis *of* education, not one *in* education.

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FROM THE EDITOR

James L. Morrison
On the Horizon

Recently Jim Hearn, Richard Clugston and Rick Heydinger, pioneers in environmental scanning techniques at the University of Minnesota (UM), published a five-year follow-up to the UM scanning effort (Hearn, Clugston, & Heydinger, 1993) originally described by Hearn and Heydinger (1985). I commend both articles to you. They contain a comprehensive review of literature describing theoretical and prescriptive environmental scanning models, the model the authors and their colleagues attempted to implement at UM, and a review of the implementation over the 1983-88 time period.

The model they sought to implement was a theory-based, voluntary effort directed by staff of the academic vice president's office. The model was comprehensive and systematic (i.e., they scanned the social, technological, economic and political sectors using a variety of information resources). Scanners published abstracts containing a summary of information they thought would be of value to total organizational planning. In the 1985 article Hearn and Heydinger noted that research universities may ignore systematic environmental scanning because such efforts raise organizational tensions (e.g., questions of whether scanners will include value-neutral items for information only or provide interpretation and recommendations for action; whether focus will be on process or on product; whether small issues and trends will be considered along with large ones; whether scanning responsibilities will be assigned to volunteers or staff; whether work will be done individually or collectively; whether a

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The Institute for Academic and Professional Leadership serves leaders in higher education by providing professional development workshops and seminars. For more information about the institute, its facilities and its services, contact William S. Pate, program coordinator, The Friday Center, CB #1020, UNC-Chapel Hill, Chapel Hill, NC 27599. (919) 962-3276. Internet wspate@gibbs.oit.unc.edu.

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centralized strategy will be pursued or only centralized coordination sought). Hearn and Heydinger concluded that without full support from the top, no scanning effort would be successful.

Hearn and Heydinger concluded that without full support from the top, no scanning effort would be successful.

The purpose of the 1993 article was to examine the results of the scanning effort at UM. To do so, they interviewed eight top UM administrators, including a vice president, five deans or associate deans, and two planning officers. Hearn, Clugston and Heydinger concluded that scanning had not become institutionalized at UM, even though several aspects of scanning were continued. Although scanning was no longer being pursued at the central level (e.g., the faculty senate), it was at several academic and nonacademic units, primarily in the professional schools. Scanning products tended to be unstructured (unwritten and vague) and value-laden (prone to active interpretation). In those units incorporating scanning in their planning activities, scanning had taken the leap from voluntary to mandatory: a part of regular job responsibilities.

Why didn't scanning become institutionalized? Hearn, Clugston and Heydinger (1993) suggested several possible reasons. A barrier was automatically present in UM's organizational structure as a large, complex, loosely coupled, highly differentiated research university, characterized by slowness and uncertainty vis-à-vis external threats or opportunities. No champions in positions of power argued that the process should be central to the planning process. A "policy vacuum" existed at UM (i.e., no constituency of policy makers eagerly awaited the results of the scanning effort). Trend analyses and issue briefs were often seen as having little relevance. Policy makers felt that if the effort were expanded, it would burden leaders with additional staff. Scanning was seen as placing time and energy demands on participants, thereby raising cost-effectiveness concerns. University administrators saw adapting to external trends and markets as conflicting with the pursuit of academic quality. Top administrators expressed suspicions concerning the logic and usefulness of scanning activities. Scanning seemed insufficiently connected to the mission of the institution.

Nevertheless, Hearn et al. (1993) foresee an increasing need for attention to the external environment at UM, because we are entering "a time in which historic alignments with external, traditionally serviced constituencies are being changed fundamentally. Such realignments may call forth a period of organizational 're-creation,' with special needs for monitoring and responding to environmental developments (p. 33)." For scanning to succeed, it will need to be integrated into decision making activities; legitimized as a priority for administrators; oriented toward output; opened to the dynamic aspects of anarchic organizations rather than rationalized into discrete categories; treated as an art to be developed, not a magic bullet of instant utility; and to be strategically focused, rather than focused on general, all-purpose reconnaissance.

I appreciate the scholarly care and insight with which Hearn, Clugston, and Heydinger have prepared this case study. The article is instructive, and adds to our developing knowledge of the use of this important tool in effective planning. As a long-time advocate of environmental scanning, I concur with their argument that senior leaders must attend more carefully to the external environment in these turbulent times. The time and effort senior leaders expend in scanning and interpreting the implications of changes in the external environment for their institution not only expands their personal and collective knowledge, but also facilitates a common, proactive view of their institution's future.

***On the Horizon* can fill this void by providing information that can facilitate planning at institutions that cannot afford to establish their own process.**

However, as Hearn et al. point out, even introducing a scanning system at an institution is difficult; actually establishing a scanning system organizationally requires much time and effort. Consequently, most institutions do not have a comprehensive, on-going scanning process.

We hope that *On the Horizon* can fill this void by providing information that can facilitate planning at institutions that cannot afford to establish their own process. Our notion of the site licenses was that the CEO, or the director of institutional research and planning, with limited staff and resources, could keep campus leaders informed of potential developments by regularly giving them *On the Horizon*, buttressed, perhaps, with his or her own commentary about the implications for that particular campus. Please let us know how we are doing.

[Hearn, J.C., Clugston, R.M., & Heydinger, R. B. (1993, Fall). Five years of strategic environmental assessment efforts at a research university: A case study of an organizational innovation. *Innovative Higher Education, 18*(1), pp. 7-36; Hearn, J. C. & Heydinger, R. B. (1985). Scanning the external environment of a university: Objectives, constraints, and possibilities. *Journal of Higher Education, 56*(4), 419-445.]

from page 2

To meet that crisis we will need a thorough overhaul of educational goals and pedagogy at all levels, not more tinkering. As possible guidelines for that process I suggest that:

1. All education is environmental education. By what is included or excluded, emphasized or ignored, we unavoidably teach students that they are part of or apart from natural systems.

2. The process of education is as important as its content. For this reason good environmental education stresses experience, practical skills, and interdisciplinary learning. A great deal of it necessarily occurs outdoors.

The goal of education is to equip people for service, not for upward mobility.

3. Academic architecture is a kind of crystallized pedagogy that should reflect our citizenship in the biotic community by using solar energy, using environmentally benign materials, recycling wastes, eliminating toxins and encouraging biological diversity.

4. Schools, colleges, and universities educate by what they do as well as by what they say. All educational institutions should aim to minimize the environmental costs of campus operations by reducing the flow of energy, materials, food, water, and waste, and by using their buying and investment power to support the emergence of sustainable regional economies.

5. The goal of education is to equip people for service, not for upward mobility.

6. There is an irreducible body of knowledge that all students should know, including how the earth works as a physical system, the basics of ecology and thermodynamics, the earth's vital signs, the essentials of human ecology, the natural history of their own region, and the kinds of information that will enable them to restore natural systems and build ecologically resilient communities.

A long-term constituency will require systematic efforts to reeducate teachers and administrators to understand what the long term will require of them.

[Editor's note: Professor Orr writes the environmental section for *On the Horizon.* References cited: Gore, A. (1992). *Earth in the balance: Ecology and the human spirit.* Boston: Houghton Mifflin; Kennedy, P. (1993). *Preparing for the twenty-first century.* New York: Random House; Ornstein, R. & Ehrlich, P. (1989). *New world, new mind.* New York: Doubleday; Pelikan, Y. (1992). *The idea of the university.* New Haven: Yale University Press; Perriti, N. (1992, October 28). Colleges are doing pitifully little to protect the environment. *The Chronicle of Higher Education.*, p. 10; Rensberger, B. (1993, August 2-8). Blowing hot and cold on global warming. *Washington Post Weekly,* p. 38; Taubes, G. (1993, 11 June). The ozone backlash. *Science, 1580-1583.*]

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Upcoming Professional Development Opportunities

The Institute for Professional Development at UNC announces two seminars: *Applying TQM to Higher Education* (November 14-16, 1993) and *Strategic Planning for Higher Education* (December 5-7, 1993). For more information contact William S. Pate, The Friday Center, CB# 1020, UNC-Chapel Hill, Chapel Hill, NC 27599. (919) 962-3276. Internet wspate@gibbs.oit.unc.edu.

The Fourth *Global Change* International Higher Education Strategic Management Seminar, *Managing Issues on the Horizon* , will be held at New Hall, Saint Andrews University, Scotland, July 29-August 1, 1994. This seminar is sponsored by *On the Horizon* in conjunction with H+E Associates and St. Andrews University. For more information contact James L. Morrison, CB# 3500, Peabody Hall, UNC-Chapel Hill, Chapel Hill, NC 27599. (919) 966-1354. Internet James_Morrison@unc.edu.

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SOCIAL

Jan M. Grell,
Program Director
The Ohio Policy Issues Network
The University of Akron

Ethics in Business May Improve Ethics in Society

A renewed interest in business ethics has been sparked by a string of scandals from Drexel Burnham Lambert to Olevetti, Fiat, and a large portion of corporate Italy. Business schools and other sectors have taken on the challenge; however, they are market driven. Ninety percent of America's schools offer over 500 courses on business ethics. Over 20 dedicated research units worldwide are studying this topic.

A fundamental difficulty with business ethics is that advice offered by academic papers often leads to moral absolutism. In reality, people in business do not sacrifice their companies on the altar of altruistic extremism. What managers need are options for dealing with the complex relationship between altruism, self-interest and the other factors that make their business click.

Grand theorizing with business ethics is a further problem. Business ethics have been reduced to a state of unproductive flux. Today's leaders should focus on mechanisms to assist in the resolution of ethical dilemmas in the workplace. To achieve this goal, numerous firms including Fiat are establishing ethics committees to implement codes of conduct, ombudsmen, and ethical codes. Sensitivity, courage, honesty, and persistence are qualities suggested for managers.

Laura Nash of the Boston University Graduate School of Management states that resolution of ethical dilemmas means thinking of business "in terms of covenants—with employees, customers, suppliers, and so on." A manager's primary obligation is to ensure that his covenants mean "all parties in a commercial endeavor should prosper on the basis of created value, and the voluntary exchange of resources." [How to be ethical and still come top. (1993, June 5-11). *The Economist, 327* (7814), 71].

In reality, people in business do not sacrifice their companies on the altar of altruistic extremism.

Implications

Numerous managers and leaders consider business ethics irrelevant. The challenge for institutions of higher education is twofold: first, leaders and decision makers must exemplify ethical behavior and be held accountable to a higher authority and the public; second, leaders of higher education should revise or develop policies for ethical standards that reflect a rapidly changing technological society. These policies should focus on the necessary mechanisms to assist in resolving ethical dilemmas in administrative offices, classrooms, academic departments, work study programs, and theoretical and applied research.

The workplace, campus and community program environments will all benefit if those in higher education exemplify high standards for dealing with ethical issues.

The Aging of Human Species

The aging of humanity will have a tremendous impact on all aspects of society. Economic and social structures will change as a result. Leaders should plan for those changes. In 1900, 10 to 17 million people reached elderly status, representing 6.2% of the population. The number of people in this age group is estimated to reach 2.5 billion or 20% of the world's population in the year 2000. In mid-1993 the U.S. figure was projected to be between 20-25% by the year 2000. Until recently, medical scientists and demographers have concentrated on population explosions; this article examines the issue from the angle of the aging population.

The number of people in the elderly group is estimated to reach 2.5 billion or 20% of the world's population in the year 2000.

The post-WWII baby boom and the decline of old age mortality are chiefly responsible for the increase in numbers of the elderly. The possible ramifications from this growing trend require more attention. One result may be the emergence of different patterns of disease and disability. Growth of the over-65 group may alter economic and social institutions. Age entitlement programs will probably be affected, because adults may spend up to one-third of their life in retirement, thereby changing the ratio of beneficiaries to taxpayers. Cross-generational attitudes may change as a larger, more diverse older population asserts itself. Finally, the funding for healthcare and the structure of the job market will obviously need to be altered to accommodate this demographic switch.

The big question is, will this transformation benefit or harm society? Currently two schools of thought exist. One group believes that the increase in longevity and health quality will aid society. A second group believes that the new elderly will be plagued with health problems, thereby draining the economy. Although this article does not recommend one view over the other, it does recommend that both public and private leaders begin to develop plans for dealing with this phenomenon. [Olshansky, S. et al. (1993, April). The aging of the human species. *Scientific American, 286* (4), 46-52.]

Implications

By the year 2000, 20-25% of the U.S. population will be over 65. Planning committees need to consider:

- How will this transition affect higher education?
- How can leaders begin to prepare for an aging population?
- How can the increase in the aging population benefit higher education?

Higher education leaders should examine data and propose programs that will accommodate increasingly diverse classroom composition and student goals.

* * *

TECHNOLOGICAL

Wally Albers
Albers Systems, Inc.

Radical Changes Ahead in the Way Computers are Used

The editors of *Compute* predict the emergence of *content-centered* as opposed to the current model of computer use, *process-centered* computing. In process-centered computing, raw data goes into the computer; the machine processes it, and useful information comes out. In content-centered computing, information goes in instead of raw data, and the computer's power is used to deliver this information in a form that is more useful and engaging. Multimedia and on-line services signal the onset of the shift to content-centered computing. CD-ROM and fiber-optics applications serve to enhance and accelerate this process. [Karnes, C. (1993, October), Editorial license, *Compute*, 4.]

Implications

The shift to content centered computing will bring with it many new opportunities for computer applications across the educational spectrum. "User friendliness" will take on new meaning as interfaces take advantage of the new technology. Hardware and software obsolescence will accelerate. These issues must be considered in any strategic planning.

Big Science an Issue Again

Federal lawmakers struggling with budgets and deficits must consider science and technology. Up for approval are the $25 billion space station and the $11 billion Superconducting Super Collider (SSC)—"big science" items. Are they cost-effective? Among the arguments for the space station are purely political ones such as preservation of 15,000 jobs in a hard-hit aerospace sector; few of the supporting arguments have any scientific basis. On the other hand, the SSC is supported almost exclusively in terms of scientific needs; little of the debate comes from the political side of Washington. Watch for how and why these decisions are made. The basis for decision making will be the key to the shape of science and technology policy in the near future. [Carey, J. (1993, September 13). The super collider is science: The space station is pork, *Business Week*, 88).]

Scientific policy at the federal level continues to flounder, in spite of the fundamental importance of technology in global competition.

Implications

Technology (and science) policy at the federal level continues to flounder, in spite of the fundamental importance of technology in global competition. Since a major function of colleges and universities is to develop technology, it behooves higher education to be aware of policy developments, and to provide reasoned recommendations to lawmakers. The record is clear: university-based educators have not been proactive in this area. They should dramatically expand their participation.

The Technology of Consciousness

In recent years startling new ways have been developed to study the brain. An alphabet soup of techniques includes the well-known CAT scan as well as PET (positron emission tomography), MRI (magnetic resonance imaging), and SQUIDS (superconducting quantum interference devices). These technologies, along with advances in neurosciences, mathematics and neurological chemistry, have substantially contributed to progress in our understanding of how the brain works. This in turn has spurred a renaissance in the study of the mind and one of its most mysterious attributes, consciousness. Although it is too early to draw new conclusions about the structure of consciousness, it is increasingly clear that the old brain-computer analogy is no longer appropriate and the mind-body duality no longer a viable concept. The more science learns about the brain, the more debate we will have on this elusive aspect of living: consciousness. [Killheffer, R. J. K. (1993, October). The consciousness wars, *Omni*, 50-59.]

Implications

Any advances in understanding how the workings of the brain transfer into understanding of human consciousness will have tremendous significance for education. Not only will the attributes of memory, creativity, motivation and attitude become clearer, but the practice of education could become more "scientific." Clearly, developments in this area bear watching by educators and administrators alike.

ECONOMIC

A.G. Stell Kefalas,
Professor of
Management
University of Georgia

Upbeat Mood

Regardless of whatever everybody else says about the economy, CEOs around the country are upbeat. In their 1993 survey, Ernst & Young, sponsors of the Entrepreneur of the Year awards, asked past participants a few questions about the reasons for starting their companies and about their future plans. The majority responded to the question, "What drove you to start your company?" with the desire to control their destiny, build wealth, or start something new.

The same group, despite fears of new taxes and healthcare reform, appears optimistic about the economy. Seventy-four percent expect their profits to rise this year; 84% noted the pressing need for tort reform; more than two thirds plan to increase employment by an average of 16% in the coming year; 60% added to their work force last year, creating nearly 15,000 jobs; 55% plan to upgrade technology—an increase of 20% over last year. Their top concern was maintaining quality, followed by improving profits and retaining key people. [Abramovitch, I. (1993). Top CEOs rank issues. Success, *40* (7), 8.]

The Next 150 Years

To commemorate its 150th anniversary, *The Economist* invited eminent writers, thinkers, and politicians to consider the next 150 years. All were asked to think as far ahead as they dared, while considering topics that have not been given enough attention and could play an important role in shaping the future.

To commemorate its 150th anniversary, *The Economist* invited eminent writers, thinkers and politicians to consider the next 150 years.

Ignoring Samuel Goldwyn's advice, "never prophesy, especially about the future," the 19 contributors made bold predictions. However, the prevailing style was one of observing present trends and prescribing how to deal with problems or opportunities already present.

The champion concern was of a world with only one superpower. No obvious successor exists to the USSR, not even China. Daniel Boorstin worries that the United States is so obsessed with its own conscience that it may allow political correctness to lead it down paths that are economically, diplomatically, and militarily incorrect.

Despite these concerns, the dominant sentiment was "optimism: about future standard of living, about the gap between rich and poor countries, about mankind's ability to solve as many problems as it causes, and about worries that the planet itself might give up the ghost." [Editorial (1993, September 11). The next 150 years, *The Economist, 328* (7828), 56)]

The staff of the World Bank in Washington, D.C., seems to share the optimism about the world economy in general and various local economies in particular. In its latest report, *Global Economic Prospects and the Developing Countries*, the bank explores economic links with an emphasis on developing countries. Summarizing the financial environment of the 1990s, the bank reports that developing countries' growth was poor at the start of the decade, and has actually declined in per capita terms, partly reflecting the loss of output associated with the transformation of Eastern Europe and the Former Soviet Union (FSU), the recession in the United States and the recession's recent spread to Germany and Japan. Prospects for the developing countries are qualified in the short run by the uncertain outlook for recovery in the industrialized countries, which represent three quarters of world output.

The remainder of the 1990s is expected to be brighter in terms of growth in the developing countries' economies. Growth patterns in the developed countries are one reason for optimism. Changes in the sociopolitical environment of the developing countries, along with the stabilization of commodity prices, are expected to contribute toward attracting more favorable external financing and more foreign direct investment, both necessary ingredients for economic growth and prosperity.

Missing out on a Glittering Market

The 1990s ushered in the Age of Asia. The world's growth center shifted to the countries of the Pacific, spurring the fastest-rising markets on the globe. While the United States contained Communism, the Asians were reinventing Capitalism. While Americans were obsessed with Japanese exports and their barriers to American attempts to penetrate Japanese markets, a little known group of countries, the Association of South-Eastern Nations (ASEAN, consisting of Thailand, Malaysia, Singapore, the Philippines, Brunei and Indonesia) has collectively experienced annual growth of 7% over the last decade. Last year ASEAN grew 5.3%, impressive in light of the worldwide recession.

The 330 million people of these six countries exported some $68 billion in products to the United States, while importing only $24 billion of American products. The prospects for the region are staggering. Future plans include the incorporation into ASEAN of Vietnam, Cambodia, Papua New Guinea, Korea, and China to create ASIA 2000.

Why are Americans shying away from the region with all this promising future? Aside from the usual three giants—IBM, Coca Cola and Exxon—which have been operating in the region for years, most American companies have been reluctant to explore the opportunities. The Japanese meanwhile have begun shifting their investment from the United States to Asia. According to the Japanese Finance Ministry, Japan's cumulative investment in Asia, most of it in Southeast Asia, tripled from $20 billion in 1985 to $60 billion at the end of last year. That is almost double the $32.2 billion that the Commerce Department says American companies have invested in the region. More than 40% of those investments are in a single industry: petroleum. [Shenon, P. (1993, September 12). Missing out on a glittering market. *New York Times*, p. F6.]

"Trends, like horses, are easier to ride in the direction they are already going."

Implications

In his 1982 best seller *Megatrends*, John Naisbitt wrote, "Trends, like horses, are easier to ride in the direction they are already going." The trends touched upon in this review point in one direction: east. The message for higher education is clear: globalize to survive; in globalizing, ride the trends pointing east.

* * *

POLITICAL

Graham T.T.
Molitor, President
*Public Policy
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Accounting for 3% of GDP, Higher Education Attracts Increasing Political Attention

Higher education costs, currently 3% of the Gross Domestic Product (GDP), are increasing rapidly. The proportion of overall government spending for education will expand further as defense outlays are scaled back and spending priorities shift.

Educational costs that rose at rates well above inflation during the 1980s raise growing concerns. One study questions why nonteaching professional staff (e.g., lawyers and accountants) grew 61% between 1975 and 1985 while teaching ranks grew only 6%. Real administrative costs per full-time student increased 19%, almost four times the rate of increase for instruction.

Soaring educational costs have led to disproportionate enrollment, with wealthier students and foreigners on one end of the scale, and poorer students, who rely on scholarships and loan assistance programs at the other end. Some observers fear that the vast middle class is being "squeezed out." [Staff (1993, May 24). U.S. colleges could stand some downsizing. *Business Week*, p. 154.]

Implications

Major GDP components attract intense political attention. Politicians are poised to probe escalating costs and to use micro-management controls to curb them. The cry is for increased productivity: this means eliminating marginal programs and departments while capitalizing on proven specialties.

The cry is for increased productivity: eliminating marginal programs and departments while capitalizing on proven specialties.

Productivity in the Classroom Encouraged by Salary Bonuses

The University of Florida in an attempt to improve performance has granted base salary increases of $5,000 for professors achieving the highest productivity increases. Criteria include the number of students taught and the quality of instruction over a three-year period. Faculty committees evaluate quality, including review of work portfolios, student evaluations and a review of syllabi and reading lists.

The incentive is intended to blunt the move from teaching to research (because of higher pay and increased opportunities for advancement), so that teaching is not relegated to part-time professors or graduate assistants.

The productivity-incentive program is being challenged in court by the United Faculty of Florida, representing over 5,000 professors throughout the state. The union claims that it is opposed not to merit programs but objects to circumventing collective bargaining agreements. It complains that many professors were left out of the program and protests the absence of pay raises over the past three years. [Daily, D. (1993, September 15). Productivity pays for Florida professors, *USA Today*, p. 7D]

Implications

Legislators are looking for ways to boost productivity, stretch government dollars and improve educational achievement. Inducements of all kinds are certain to proliferate as institutions strive to catch up.

A Comment: Key Statistics that Drive Education Reform

Until the late-1980s debate over educational quality focused on inputs: spending levels, student-teacher ratios, salaries, educational qualifications, etc. Now the focus is on outcome, with flagging SAT scores as an important catalyst. Of course, there are many other reasons for flagging educational performance (e.g., broken homes, teenage mothers, neglected children, abject poverty, and the absence of a stable nurturing family situation.)

Education is one of the few endeavors where the solution to poor performance has been to throw more money at it. Rewarding failure sends the wrong message. During the past several decades, education outlays have doubled or tripled while the customer base (i.e., students) shrunk and performance declined. The bottom line is that schools cost too much and deliver too little—at the very time when increased intellectual development is required by an Information Era economy of escalating global competition.

Spending ever-increasing amounts of money to improve social problems, only to have the situation grow worse, is a theme that will pervade the 1990s. High spending coupled with lower achievement, deplorable literacy rates, and lackluster uniform test scores will drive reform. Over the long term the emphasis will be less upon input and more upon outcomes.

THE SITUATION ROOM

Richard Heydinger
Alliance for Higher Education Strategies University of Minnesota

Too frequently we are willing to travel to Budapest to deliver a paper but unwilling to make a presentation to the local Rotary on our recent scholarship.

A Growing Gap

Anyone who spends time at the state legislature arguing for higher education can tell you that questions about faculty productivity lurk in the wings. Jim Mingle, Executive Director of the State Higher Education Executive Officers, calls attention to the increasing gap between public perception of faculty productivity and the faculty's own judgments about their contributions, their constrained resources, and the decline in working conditions. *The Wall Street Journal* recently called faculty "the new leisure class."

The momentum is fed by student reports of inaccessible professors with limited office hours. With educational costs up again in 1993 by about 6%, the press is taking a greater interest in these reports, with every indication that they will keep the productivity question squarely before us.

Managing productivity must begin on campus with a discussion on whether the problem is real or perceived. I find a disturbing division within academia. Some colleagues insist that faculty are quite productive, while a large group jokes about the current situation, conveying impression of a real problem. Hard data and research studies equivocate on the conclusion.

Bill Massy of Stanford University at the First AAHE Conference on Incentives at Academic Departments earlier this year, urged universities to put productivity near the top of the agenda. He articulated a framework for understanding the root of productivity issues and advocated collecting productivity data and discussing it openly. Only after these steps have been taken should an institution decide whether the problem is real. An issues management strategy can then be developed.

A wise first step is to increase public understanding of the multiple roles faculty play. One strategy might call for institutional publications to feature stories on the day-to-day lives of faculty members. The institution might work with the press to place stories on professors who have made noteworthy contributions in teaching, research or service. Legislators might be invited to campus for a full day of involvement in laboratories, classrooms and oral exams. All of these strategies are aimed at portraying the faculty member as more than just a classroom teacher.

Getting faculty members into the community to discuss their work can be effective. Too frequently we are willing to travel to Budapest to deliver a paper but unwilling to make a presentation to the local Rotary on our recent scholarship. The University of Minnesota has successfully run a day-long community program in which a group of faculty travel to a town to discuss a topic of community importance (e.g., youth development). As a result, community members have tangible evidence of productivity that goes beyond classroom teaching.

If the number of campus debates underway is any indication, some institutions already have concluded that a change in the mix of faculty activities is necessary. Legislatures, boards and presidents are proposing new teaching policies, some prescribing that so many courses must be taught per year and others prescribing that senior faculty must teach introductory courses.

I find such provisions misguided. New rules will yield creative responses aimed only at circumventing those regulations that are not in the interests of faculty or their departments. We cannot expect to alter institutional outcomes without altering faculty rewards. Although financial incentives are important, they are not the only ones available: release time, departmental support, and professional development opportunities can be powerful incentives.

If different outcomes are desired, then we should manage those outcomes. Fitting faculty rewards to the desired outcomes, not creating more bureaucratic rules, is the most effective way to boost productivity. The *P* word is increasingly dominating American and European higher-education debates. The forward-looking administrator will craft effective approaches for both closing the gap between public and faculty expectations and changing the mix of outcomes, as called for by higher education's changing role.

COMMENTARY

Arnold Brown,
Chairman
*Weiner, Edrich,
Brown, Inc.*

Apple Juice Should Be Made From Apples

Total Quality Management (TQM) is one of those things like the hula hoop that I wish I had invented: It costs next to nothing to produce, and customers can't get enough of it soon enough. Like PacMan it is now gobbling up colleges the way it gobbled up businesses.

If you are contemplating signing up with some pricey TQM consultant, wait until you read this brief article. It contains a complete and perfect TQM program, and it costs nothing. (It's not patented or trademarked; you can use it gratis.)

This TQM program has three statements of principle.

1. The most all-encompassing is the New Testament admonishment that translates into the Golden Rule: "Do unto others as you would have others do unto you." (Matthew 7:12 or Luke 6:31)

2. "The purpose of a business is to get and keep a customer." (Theodore Levitt, a professor at Harvard Business School)

3. "I thought apple juice should be made from apples." (Joseph LiCari, an executive of the Beechnut Company, when asked why he had resigned from the company)

I submit these statements of principle as both the basis and the substance of a good Total Quality Management program. Administrators would do well to apply them as an overlay on their own institutions and consider whether what they now do is consistent with them.

Are institutions of higher education based on integrity today, observing both the spirit and the letter of their covenants?

Implicit in these statements is the fundamental concept of *integrity*. In any institution integrity means operating as if the institution has covenants with all of its stakeholders. Such covenants require that maximum value be offered to all stakeholders and that minimum harm be done to them.

Quality derives naturally from integrity (though that does not necessarily work in reverse). Integrity, which always works top down, creates an atmosphere in which everyone involved knows that ethical behavior is the only acceptable conduct.

Are institutions of higher education based on integrity today, observing both the spirit and the letter of their covenants? Do they live by the Golden Rule? Are they truly customer-centered? Do they make apple juice from apples?

Honesty compels us to say that we cannot answer all the above questions with an unequivocal yes. Consider the way colleges recruit students in part by boasting of their faculty. The faculty are there; yet in many schools, new students are unlikely to be taught by the eminent scholars who were such a selling point. Most will be assigned to graduate assistants. Good as they may be, they are not the advertised product—in other words, they ain't apples.

In the future every institution that competes in the marketplace will have three primary assets: its customers, its personnel and its reputation. What gets and keeps customers, what attracts and keeps the best personnel, and what maintains a reputation for excellence is integrity.

Customer expectations for excellence are rising because intense competition always generates higher expectations. Institutions of higher education will have to meet or exceed customer expectations if they want to thrive or even survive.

Integrity in an institution will become even more important. Genuine TQM is the program of the future.

* * *

Students as Major Players?

Chris de Winter Hebron,
Academic Director
H+E Associates

An emerging international trend in higher education is the changing role of students as players. We all know that students are players in higher education. In the U.S. and increasingly elsewhere in the world, students' tuition drives a large part of the system. But until recently we haven't really regarded students as players with a managerial influence in the design, construction or operation of higher education institutions for a variety of reasons. For example:

- The concept of *in statu pupilarii* died hard (particularly when in many nations the typical undergraduate students were not adults).
- Tuition dollars were normally family dollars in the USA, or county pounds in the U.K., or national marks in Germany, and so on. Family choice and pressure were at least as important as individual motivation. In his famous Society for Research in Higher Education (SRHE) paper, *The Disenchanted Elite*, J. A. Wankowski referred to a whole student cohort during what he called "the events of 1968," as "those who got on the educational escalator and forgot to get off."
- The "events of 1968" politicized student power and higher educational reform in an essentially confrontational and unhelpful way, and the institutional reactions to this lasted a good quarter century. Colleges and universities in each country reacted differently. In the U.S. and in the U.K., students were given roles on governing boards, but these were frequently still tokenistic in character.
- Despite all the fuss about student ratings (particularly in North America), academics have generally pictured students as remarkably passive customers, choosing from a cafeteria menu of courses or from the nicely sorted and packaged supermarket shelving of institutions found in publications such as *What College?* Until recently no one has seriously considered students as *interactive* customers, influencing product design and management.

The "events of 1968" politicized student power and higher educational reform in an essentially confrontational and unhelpful way.

What has changed around the world in the last five years to make of the new trend so prominent?

1. The world recession has had two major effects. In the U.S., "Dad's dollars" for higher education have become harder to find, making the investment a much less socially automatic thing. This has resulted in pressure on students to succeed and a pressure by students to ensure that their studies have a practical value (e.g., in terms of employability in a limited market). Second, as tax take has declined and social expenditure has risen, central and local governments are questioning the socioeconomic value of their investment in higher education, along the same lines as the questions asked by students and parents.

2. Social and demographic changes have occurred which, while varying between countries, have tended, if not to empower students, at least to render the notion of empowerment thinkable. Examples:

- the fall of the Communist regimes in Eastern Europe
- the crumbling of Apartheid in South Africa
- the increase in "mature" students in UK and Australia

In the first two examples, a paradigm shift has occurred from students as passive, obedient learners to students as leaders of change (student organizations played a major role in bringing down both systems). In the third example the political system has not changed, but a similar paradigm shift has taken place in students' self-perception as a group, from "juniors" to "equals," spearheaded by a rapid increase in the proportion of students whose life experience has been at least as rich as that of their tutors.

3. Total Quality Management (TQM) has become a key trend internationally, perhaps even a paradigm shift, because in a TQM setting, *all* customers are interactive. A rigorous TQM analysis of the role of students yields a fascinating set of ambiguities. Students are both internal and external customers. Students are simultaneously customers for an academic service, trainees in the institution, co-workers in the knowledge-production process, and themselves the material being worked upon.

Against this background, consider:

The U.K. is about to mount a major national conference to discuss a National Students' Charter on the lines of those for the National Health Service.

The distinctions between part- and full-time study and between study and work will become even more blurred than they are already.

- Portsmouth University (U.K.) is offering a Partnership Program of self-managed, work-based university study, with students included in the study management team.

- Anglia Polytechnic University (U.K.) has started a research project into the role of student union councils in academic quality assessment and accreditation.

- Gloucester Business School (U.K.) is proposing the use of SERVQUAL (the computer model pioneered by Parasuraman that measures quality in the service industries) as a key performance indicator for higher education quality assessment, with student SERVQUAL scores (*not* the same thing as traditional "ratings of instruction") being the key decision factor.

- More than 100 schemes exist in U.K. for peer tutoring and peer-group seminars. This is not the same as the well-tried use of doctoral students as teaching assistants. It involves undergraduate students teaching their peers or leading seminar sessions collaboratively.

- South Bank University, London, is systematically establishing TQM Customer-Supplier Agreements covering all areas of its activity, with students given privileged customer status.

- The U.K. is about to mount a major national conference to discuss a National Students' Charter on the lines of those for the National Health Service and other government agencies.

- The Netherlands already has a Charter of Students' Rights.

- Both the U.K. and the Dutch documents refer to student representation in the management of higher education.

- The head of the Student Services Bureau at UNISA (South Africa) recently proposed that the university's mission be reformulated using a student-centered approach.

- At the University of Cologne, Germany's new responsive evaluation scheme predicates that each stakeholder constituency, of which students are one major instance, will formulate its own "definitions of worth" on the basis of which judgment of an educational service should be based.

- In the United States, Eastern Washington University's Department of Education since 1983 has been developing collaborative research, writing and editing groups of five to eight members, including faculty, staff and students-as-equals within the team.

- The National University of Singapore is developing a use of the Internet system to enable students to access scholarly material anywhere in the world, whether the university has the material on file or not.

What are the trends one can foresee from this data, and what implications do they have?

First, there is a clear trend towards an increasingly *interactive* customer role for students.

Second, this role increasingly will be mirrored in real student political power—involving inputs into course design and evaluation at the institutional level and probably into budgeting processes at the regional or national level.

Third, this role will be international, as much through student use of interactive electronic technology as through the currently more conventional year abroad or international joint degree schemes.

Fourth, the distinctions between part- and full-time study and between study and work will become even more blurred than they are already—and this too will operate internationally.

Fifth, the international privileged-customer academic/work networks being set up will constantly be shifting and reformulating themselves. "Virtual" courses, student groups and institutions, rather than actual ones, will become the norm. Students will be located at home or scattered around the world, working as individuals although formally enrolled as members of a group or course, and only occasionally, if at all, traveling to a common center to meet as a group in the flesh.

Sixth, entirely new academic management structures will be needed to deal with these developments. Some are currently being developed—e.g., in the suggestions of the international management group that met in Cambridge, England, in July 1990—for flexible "re-engineered" structures for academe, similar to those proposed by Charles Handy for industry. But for much of this area, it will very much be a matter of "making it up as you go."

One thing is certain: the next few years will bring startling changes in the student's role in higher education.

Warren I. Cikins,
Vice Chairman
National Committee on Community Corrections

President Clinton's National Service Proposal:
A Truly Innovative Outreach or More of the Same?

During the 1992 presidential campaign, Bill Clinton made much of his intention to create a national service program that would give young Americans an opportunity to serve their country, doing social and humanitarian work and getting a stipend to help pay for college tuition. His commitment harkened back to President John Kennedy's inaugural speech. President Clinton wanted to create an ethos of service or recreate an earlier ethos that had been stifled by the "Me" generation of the 1980s. The President felt that the conditions were right to motivate young people to help their country meet a range of serious public needs.

What's the Situation Today?

A number of programs in operation today have similar origins to the Clinton initiative. The Peace Corps goes back to Kennedy but currently has only 5,500 volunteers. VISTA, the domestic version of the Peace Corps, currently has 3,300 volunteers. Administered under the same program (ACTION) are the Civilian and Community Corps and the general volunteer programs authorized by the Domestic Volunteer Service and the National and Community Service Acts. There currently exists a Commission on National and Community Service. The total of full-time paid volunteers, with one- or two-year commitments, is only about 30,000 today, although 38 million young people do some kind of unpaid volunteer work, involving sixty-one percent of teenagers between the ages 12 and 17.

It is difficult to measure the contribution that has been made to society. The problem is analogous to the push for more black college enrollment that took place in the 1960s, which had little follow-through, few meaningful plans of action, a lack of basic support networks, and little sense of a welcome mat being put out. Former Congressman Brooks Hays of Arkansas often pointed out that what we needed were not more "do-gooders" but a lot more "good-doers." In the vernacular of the TQM movement, we need benchmarks to determine the quality of the effort made.

President Clinton wanted to create an ethos of service or recreate an earlier ethos that had been stifled by the "Me" generation of the 1980s.

What are the Specifics of the Clinton Plan?

The Clinton plan involves two proposals—the National Service Trust Act of 1993 (H.R. 2010) and the Student Loan Reform Act of 1993. The latter bill is designed to provide for direct student loans (through universities, not banks) and income-based loan repayment. The National Service bill would extend all existing volunteer legislation and create a new Federal Corporation for National Service to combine existing management structures. Its goal is to help communities with environmental, educational and public safety needs, while helping participants put aside almost $5,000 per year in a trust fund. Minimum wage will be paid and health coverage provided. The corporation will have a 15-person, bipartisan board appointed by the President and confirmed by the Senate. It will make grants to nonprofit organizations, higher education institutions, school districts and government organizations. To receive funding, states must establish their own commissions to select programs to be funded, design strategic plans, recruit participants, disseminate information and serve as a central clearinghouse. Efforts should be made to forge public-private partnerships and encourage private money. An initial exploratory effort took place this past summer; 1,500 young people engaged in activities with at-risk children. The ten-million dollar cost was funded by the current Commission on National and Community Services.

What Should the Role of Higher Education Institutions Be?

The success or failure of this effort lies to a considerable extent in the hands of the leaders of higher education. For too long such leaders have sat at the sidelines. In the *Washington Post* of August 13, 1993, Gregory Prince, Jr., president of Hampshire College, writes that the federal government should not solely be responsible for national service programs and commits his college to match all national-service scholarships to his school. He points to a consortium of five western Massachusetts colleges that has developed a list of public service projects to be promoted, including working in health clinics, planting and harvesting agricultural crops, and teaching English to immigrants (*Washington Post*, 1993, August 13).

When graduating from Harvard College in 1951, I remember then President James Bryant Conant calling himself a hard-boiled idealist who had thrown himself into creating a better society. There has been a dearth of academic voices calling for renewed idealism in facing the nation's problems. Let us not be intimidated by the Vietnam War experience. College presidents should join new national and state commissions and have their voices heard in shaping the national debate. They will make the difference on whether the Clinton initiative catches hold with the American people or becomes simply another blip on the public affairs screen.

What is the Current Status of the Legislation?

By the end of August 1993, the House approved the Conference report on the National Service Bill, and the Senate followed in early September. The President signed the bill into law in mid-September. In the process much of the initial impetus cooled and the proposal was scaled down. Senator Nancy Kassebaum (R-KS) and others felt that even the scaled-down version was too ambitious. The law provides $621 million for Fiscal Year 1994 ($321 million for ongoing programs and $300 million for new ones), $500 million for FY 1995 and $700 million for FY 1996. An estimated 100,000 college students will enroll in the next three years. To put this in context, six million students now get some form of government aid.

Those of us who believe that a vast majority of college students could benefit welcome the opportunity for public service coupled with scholarship aid. We cannot help but feel impatient at the current pace. College presidents could play a major role in quickening that pace, so that in the not-too-distant future millions will participate. Our country is owed no less. Let us not "sin away our day of grace."

TOOLS

Bernard Glassman

Pragmatix:Information Design

Prepare for the Cyberstudent

Event: I am corresponding, via the Internet, with a University of Toronto student who is writing a novel. She is e-mailing me pieces of the manuscript for comment. We have decided that, from time to time, we will use the "talk" command so we can discuss in real time without the expense of long-distance voice calls.

It is late afternoon and we are involved in just such a discussion. Back and forth our dialogue flies, over a distance that would have taken 15 hours to drive. Suddenly in the midst of the discussion she asks, "Are you the Bernard Glassman who wrote a book on English anti-Semitism, and who was born in 1937?" "No." "Are you the Bernard Glassman from North Carolina, who teaches Zen Buddhism?" "Nope, but a lot of people confuse us." "Well, are you the Bernard Glassman who wrote *Automating Hospital Materiel Management: What Will It Do to the Market?*" "Guilty," I say.

How did she do that? Without missing a beat, she had performed an on-line search of several bibliographic databases, had turned up a few citations by people with my name and selected the ones that were most likely mine. If she had wished she could even have retrieved my article to look for anything she should take into account in our on-line discussion.

What is remarkable here is not only the possibility of engaging in real-time discussion while searching for information that *neither* discussant knows and introducing it to the conversation. What is also remarkable is that such interaction is routinely taken for granted.

What is the magic in physically shared learning spaces that is worth preserving and enhancing?

This student's undergraduate degree is in East European Studies. Although she is just entering a master's program in English, she can already perform information retrieval tasks that were formerly assigned to people with a library science or computing degree. In my personal cast of characters for the scenarios of the future, she is the cyberstudent. She has adopted cyberspace as her learning environment and integrated its tools into her distinctively personal modes of interaction. She doesn't rhapsodize over the fact that she can search the Gutenberg Project's electronic Jane Eyre on-line for appropriate passages, or download it to her hard drive for quantitative textual analysis. She just gets peeved that many of the books she wants to look at aren't available on-line yet.

What shall we do with her when we get her into the classroom? What's the point for her to have F2F (Internet jargon for "face-to-face") time with her instructors and other students? The question is not whether she can cope in a classroom or seminar setting. The real question is what the university (ironically, in her case it is the university of the late Marshall McLuhan) has to offer that will get the most out of shared physical space?

I wish I had even a satisfying subset of the answers. I look for analogies in Paul Tillich, who attempted to demonstrate that there is no religion without congregation, and drama theorists who see the audience as an essential part of the performance. What is the magic in physically shared learning spaces that is worth preserving and enhancing? How can we most successfully integrate the power of the tools now available into our use of that space?

One possible answer is permitting, asking, or telling students to perform while making use of the ever-widening variety of learning environments available. Gone are the days when we debated permitting them to bring a book to an examination, or a calculator to a math exam. Today they can bring the entire Internet, with millions of pages of text, hours of sound and thousands of pictures into the classroom. What will it mean if we let them? What will it mean if we refuse? They have a right to expect that we will have thought these questions through.

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On the Horizon

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Preparing for the Twenty-first Century

Paul M. Kennedy
Yale University

These demographically *adolescent* societies, where half the population will be aged less than 18, offer ideal conditions for social and political turbulence as millions of frustrated, energetic young people fail to gain education and employment.

The century of Lenin, Wilson, Roosevelt, Hitler, Einstein, Freud, Churchill, Stalin—but also the century of the suffragettes, Gandhi, Greenpeace, Mother Teresa, the Civil Rights movement—is drawing to a close. We head into the 21st Century, fearful that we could relive the disasters of the past. Or will humankind use its talents to improve the condition of the human race?

Technology, demography, political disintegration, cultural animosities, and ecological damage challenge our human condition. If these forces are to be contained and then channeled into fruitful directions, we will have to rely upon the greatest resource we possess—not capital, or weapons, or computers—but human beings, educated and intelligent women and men. Knowledge, understanding, critical analysis–in a word, *education*–is our ultimate tool for coping with this awesome task of preparing for the 21st Century. What today's young people, and particularly the graduates of our colleges and universities, do over the next few decades will vitally affect our collective future.

But why, it may be asked, this pressing concern about the future? Are we not out of the Cold War and into a "New World Order"? Is not the stock market up? Are not Western values triumphing across our globe?

We should be concerned, I believe, because of a number of transnational tendencies. Like the build-up of atmospheric pressures or the movement of tectonic plates, these pressures may be undramatic at first but, once the forces reach their thresholds, they can bring dislocation. New technologies, bright with promise for their inventors and investors, contain the potential to undermine traditional ways of making, growing, and trading things. For example, prototype factories in Japan, where robots have replaced humans in assembly and manufacture, may point to the end of the "factory system" as we know it, at the very moment when the global labor market most needs to create more jobs. Laboratory-made foodstuffs raise questions about the viability of traditional farming. Massive flows of 24-hour-a-day currency and capital exchanges dwarf national banks and economies. Multinational companies, pressed by the increasing pace of a globalized economy, switch investment, product-lines and jobs from one continent to another, bringing fresh employment to faraway places and social stress to abandoned company towns at home.

Demographically, the pressures for change are severe. Our planet of 5.5 billion human beings is adding 95 million each year, projecting a total of 8-9 billion by 2025 and 10-12 billion by 2050. The overwhelming bulk of that population increase is forecast to occur in poor, resource-depleted countries lacking capital and infrastructure, whereas many richer nations contain stagnant, aging populations. Within poor countries a gigantic internal migration is taking place as masses of the unemployed and uneducated stream into vast shanty-cities already bursting at the seams. These demographically *adolescent* societies, where half the population will be aged less than 18, offer ideal conditions for social and political turbulence as millions of frustrated, energetic young people fail to gain education and employment. They also provide a "push" factor for the fast-growing migrations from poor to richer societies, across the Rio Grande, across the Mediterranean, through the Central European passes. This surge in turn provokes indigenous conflict as locals worry about losing jobs and security. The natives react in a backlash against the immigrants.

Profligate consumption habits of rich societies (especially the U.S.), the swift but wide industrialization process in some developing countries, and the economic activities of billions of desperate cultivators, herdsmen, foresters, and peasants, are impacting upon our natural environment with serious consequences, both locally and globally. As people in China, India, Brazil, and Mexico become richer with modernization advances, they may be destroying their native ecologies.

These technological, demographic, and environmental forces for change are not separate from, but in fact increasingly interacting with, the domain of politics, regional rivalries, territorial quarrels, and ethnic and religious tensions. Responses

Colleges and universities should pursue knowledge for its own sake, but that is not their sole purpose; otherwise we should be like All Souls College, Oxford, where there are neither undergraduates nor graduates–only professors, pursuing research.

from Tokyo to Rome, from Washington to Berlin, seem thoroughly inadequate thus far. The pressures encourage the populace's turn towards demographic and fundamentalist political movements, towards a disparaging of other cultures and other peoples, to a turning inwards.

Can anything be done to ameliorate or even arrest these ominous trends? In *theory* yes. What if we employed the tens of thousands of scientists and engineers now released from Cold War-related research to devote their talents to producing solutions to our global problems? Solutions could range from the truly dramatic and large-scale (like a significant breakthrough in photovoltaic or other solar energy systems) to low-level, appropriate, sustainable, village-based technologies that are, in experimental form, already showing promise in West Africa and India. What if we could find a way of transferring the results of biotech advances (e.g., disease-resistant and heat-resistant crops) to poorer nations *without* requiring large patent or user fees? What if the rich OECD countries actually fulfilled their 20-year-old promise to allocate a mere 0.7% of Gross Domestic Product (GDP) each year to development aid?

Changing priorities and reallocating spending targets clearly require political leaders with a *global* vision and a willingness to articulate larger, *universal* principles. Perhaps we have such leaders now; but perhaps they are so concentrating upon domestic fiscal and health-care issues, admittedly important, that they will be slow and hesitant to act. What could get them to change priorities? In a democracy, the answer is clear: persistent pressure and expressions of concern.

Colleges and universities should pursue knowledge for its own sake, but that is not their sole purpose; otherwise we should be like All Souls College, Oxford, where there are neither undergraduates nor graduates–only professors, pursuing research. There is *another* part and another *purpose* to reaching the young: namely educating students to be world *citizens* aware of, interested in, and informed about what is happening both to their country and to the larger global society.

I'm not sure whether we have properly reconsidered our curriculum, with its heavy emphasis upon traditional disciplinary boundaries and ever greater specialization. By all means, if you wish, insist that every student take a course in Western Civilization or even in non-Western Civilizations. But consider also courses on "Science, Technology and Society" and on "Contemporary History," especially in its global manifestations. What about requiring students to investigate comparative cultures and religions, to assist a better understanding of *other* people's belief systems?

In this fractured world of ours, where experts now predict that our biggest future challenge will be the coming clash of civilizations, we must trade off restrictions for restructures; we must rethink civilization and expand our curricula to embrace the globe.

[*Editor's note:* Professor Kennedy has recently published a "must read" book, *Preparing for the Twenty-First Century* (Random House, 1993). This article is adapted from Professor Kennedy's address to Clark University's Fall Convocation, September 1, 1993.]

* * *

Upcoming Professional Development Opportunity

The Fourth *Global Change* International Higher Education Strategic Management Seminar, *Managing Issues on the Horizon*, will be held at New Hall, Saint Andrews University, Scotland, July 29–August 1, 1994. This seminar is sponsored by *On the Horizon* in conjunction with H+E Associates and St. Andrews University. For more information contact James L. Morrison, CB#3500, Peabody Hall, UNC-Chapel Hill, Chapel Hill, NC 27599-3500. (919)966-1354. Internet James_Morrison@unc.edu.

FROM THE EDITOR

James L. Morrison
On the Horizon

Some time ago, a colleague, responsible for planning at a small college, asked me a simple question: How could he use *On the Horizon* in his institutional planning activities?

I immediately replied: Get a site license, then reproduce and send each issue to everyone on your planning committee, with a cover memo written on your letterhead. This saves staff time and keeps planning committee members alert to future possibilities rather than focusing only on the next day or the next week.

I have had time to reflect on my response, which although reasonable was not fully adequate. If he asked me the question today, I would add this to my original response: View each issue of *On the Horizon* as a pump-primer to institutional planning. For example, your cover letter should urge committee members to consider how the content of particular items in the newsletter affect the institution and write down their thoughts (or send them to the group via e-mail); their thoughts would be used to begin discussion at the next committee meeting.

Before the meeting, compose a questionnaire identifying those articles in *On the Horizon* that may affect either the college as a whole or particular curricular programs in the college. Ask committee members to rank-order the most important ones for that college, and follow this rank order for the discussion agenda.

As you move along in the academic year and the committee becomes accustomed to this process, request members to send you articles, notes, or

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On the Horizon focuses on potential developments and critical trends in higher education. It is published in October, December, February, April, and June by the Institute for Academic and Professional Leadership, School of Education, The University of North Carolina at Chapel Hill. For more information, write James L. Morrison, editor, *On the Horizon*, CB# 3500 Peabody Hall, University of North Carolina, Chapel Hill, NC 27599. (919) 966-1354. Internet James_Morrison@unc.edu.

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BEST COPY AVAILABLE

Of course one of the major reasons for publishing *On the Horizon* is to bring you and your colleagues the expertise and foresight of an exceptional and diverse editorial board.

commentary that they encounter in their reading and at conferences about potential developments that could affect the institution. Ask them to use the structure of the newsletter: send information about signals of change in the STEEP (i.e., *social, technological, economic, environmental,* and *political*) categories, on the local, regional, national, and global levels. Explain the reason for using this structure: developments in one sector affect developments in other sectors (e.g., a war in the Middle East affects fuel prices in the U.S.); therefore, in order to anticipate change, we need to look for developments that may have direct or indirect effects on the college.

Suggest that they examine their sources for change in relevant variables (e.g., average SAT scores of entering college freshmen, percentage of black males applying for college). What change is already taking place? Is there a movement upward or downward? What are the projections? What are the emerging trends (i.e., what combinations of data points—past trends, events, precursors—suggest and support the early stages of a possible trend)? What external events, policies, or regulatory actions would affect or be affected by the projections? Ask your colleagues to look for forecasts by experts. Ask that they append their own implications section to the emerging issues, critical trends, or potential developments when they send their information items.

Summarize the articles and their implications in your cover letter when you send the next issue of *On the Horizon*. As before, include a questionnaire asking each committee member to rank the five most important items submitted by the committee or included in the newsletter.

Prepare an agenda for the meeting that includes the top items. At the meeting, focused around these items, draw out the implications of the potential developments for ongoing institutional and program planning. Committee members may want more information about a particular trend or potential event. In this case, enlist the aid of the research librarian (who should be on your planning committee anyway).

Regularly circulating information about potential developments and asking committee members to think of their implications reinforce a future-oriented posture in your colleagues. They will begin to read, hear, and talk about this information not only as something intellectually interesting but as information they can use in practical institutional planning.

Of course one of the major reasons for publishing *On the Horizon* is to bring you and your colleagues the expertise and foresight of an exceptional and diverse editorial board. Our objective is to alert readers to developments that may affect their institutions and to offer college and university leaders guidance on what proactive measures institutions can take. Please let us know how we are doing.

* * *

SOCIAL

Jan M. Grell,
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How Societies May Affect Families of the 21st Century

Numerous social scientists question the viability of the nuclear family as an institution in the next century. In order to offer predictions, researchers often examine the effect the social context has on the family and how future public policy may influence the transformation of the post-nuclear family. Two major viewpoints prevail: one asserts that the family is failing America; the second believes that America is failing the family. Karlstrom and Sheen (1993) support the latter viewpoint. Advocates point to a massive neglect of education, day care, housing, and health care, which is often compounded by insecurity, low-wage work and the disintegration of a social safety net. This argument is supported by a continual decline in the average family's take-home pay since 1974 and a 50% increase in the proportion of full-time, year-round workers who are paid too little to raise a four-member family above the poverty line.

If this assessment of the problem is even partially credible, private and public leaders should begin to construct a supportive social structure that will meet the needs of 21st century families. Karlstrom and Sheen (1993) suggest expanding role opportunities for both genders in the work place and home. The plan includes breaking glass ceilings; sharing more family duties; increasing the viability of one-parent families by constructing social support systems; and empowering children in order that they may become rational, responsible adults. The authors are not criticizing the traditional roles of families, or people in society; instead they are advocating goals to assist societal adaptation and support families that are changing. [Karlstrom, F. and Sheen, D. (1993, Summer). Families of the twenty-first century: For better, or for worse? *Futures Research Quarterly, 9*(2), pp. 61-69.]

Implications

Diverse family forms, multi-culturalism, and class restructuring will continue to play key roles in American society. Higher education leaders should plan to create social support systems and develop long-range plans to accommodate the changing needs of families to higher education. Furthermore, administrators should create mechanisms that generate curricula to accommodate changes in the market place and the labor force.

Although many managers may claim that IQ levels and persistence are the main components for top performers, empirical testing has shown otherwise.

Creating Top Performers

In today's competitive market, businesses need to keep up with the shifts in consumer needs as well as the entrance of new services and products to the market. Kelley and Caplan (1993) suggest that intellectual capital can be used in order to achieve this critical goal, rather than relying solely on new technologies. The key to gaining the intellectual capital may be improving the production of solid middle performers. Although many managers may claim that IQ levels and persistence are the main components for top performers, empirical testing has shown otherwise. For example at AT&T Bell Laboratories, the academically brightest were hired in the early 1980s, yet productivity fell. The authors then began to study how to improve productivity of knowledge professionals, using professionals at Bell laboratories. In the final stages, nine work strategies were developed to help improve middle performers.

- **Taking Initiatives:** accepting responsibility above and beyond your stated job, volunteering for additional activities, and promoting new ideas
- **Networking:** getting direct and immediate access to co-workers with technical expertise and sharing your own knowledge with those who need it
- **Self Management:** regulating your own work commitments, time, performance level, and career growth
- **Teamwork Effectiveness:** assuming joint responsibility for work activities, coordinating efforts, and accomplishing shared goals
- **Leadership:** formulating, stating, and building consensus on common goals and working to accomplish them
- **Followership:** helping the leader accomplish the organization's goals, but thinking cooperatively on your own rather than relying solely on managerial direction
- **Perspective:** seeing your job in its larger context and adopting other viewpoints, like those of a manager, student or work team
- **Show-and-tell:** presenting your ideas persuasively in written or oral form
- **Organizational savvy:** navigating the competing individual or group interests in an organization to promote cooperation, address conflicts, and get things done

Kelley and Caplan (1993) suggest that managers may devise a program in which respected top performers develop workshops, offering valuable tips to others, to promote these nine strategies. People may be more inclined to listen if the training program is taught by a peer rather than an outside trainer. Groups made up of top and middle performers can be arranged to work as a team. This team would work on one of the nine strategies on a weekly basis to improve the company's intellectual capital and professional productivity. [Kelley, R. and Caplan, J. (1993, July-August). How Bell Labs create star performers. *Harvard Business Review, 7*(4), pp. 128-139.]

Implications

Institutions of higher education should take advantage of these strategies. Administrators might consider the potential increase in intellectual capital by the combined use of top and middle performers. With growing competing interests due to fewer resources, leaders in higher education need organizational savvy to promote cooperation, to address conflicts, and to get things done.

* * *

TECHNOLOGICAL

Wally Albers

Albers Systems, Inc.

Assembly Line Reborn, But In Reverse

Disassembly lines may be in our future. Driven by the potential for tough new environmental regulations on material recycling, manufacturers must look for ways to facilitate recycling at the end of their products' life cycle. One alternative is the disassembly line: used-up products like electrical appliances, automobiles, trucks, and personal computers would enter the front end of the process and, after dismantling, would reappear as bins of steel, nonferrous metals, plastics, glass, rubber and other sundry materials, to be sold to recycling centers for reprocessing.

To address the questions about cost-effectiveness, product and manufacturing engineers are starting to incorporate explicitly into their DFA (Design For Assembly) execution many new disassembly requirements. It looks as if manufacturers are responsible for their products not just from the "cradle to the grave," but from the "cradle to reincarnation." [Owen, J. V. (1993, October). Environmentally conscious manufacturing, *Manufacturing Engineering, 3*(4), pp. 44-55.]

Implications

Dismantling for purposes of recycling has become big business and promises to get even bigger. It's changing the production engineering of many

Academic publishers have compiled impressive databases that can be used to produce customized college textbooks. In very little lead time, a manufacturer (publisher) will be able to provide an updated book to the professor's specifications.

of our common commercial products. It's also spawning new phraseology: technological rhetoric like "junkyard R&D" and "dismantling economics," for starters. Future curriculum changes in engineering and business schools should consider incorporating these new realities of technology and the marketplace.

The Sleeping Giant: Electronic Publishing

Electronic publishing is neither new nor particularly high-tech. In a general sense, the term refers to the electronic transfer of words or pictures from one party to another. What is relatively new is that commercial publishers, who historically have relied exclusively on an ink-and-paper product, have begun using the electronic highway to deliver their wares, including newspapers, journals and books. Peter Horner, in a recent article in *OR/MS Today*, a joint publication of the Operations Research Society of America and the Institute of Management Science, explores the impact that electronic publishing is having, and will have, on the publication of academic journals and textbooks. Several publications, ranging from widely read magazines and newspapers to obscure scientific journals, are already electronically available, and the list continues to grow. Books, and some journals, are delivered in the form of a CD-ROM, which includes not only text but also elaborate graphics, and in many cases, sound. Acquisition of electronically published material will be greatly facilitated as the electronic highway networks develop and it becomes possible to download and print off on-line services more efficiently. [Horner, P. (October 1993). Publishing with power and punch, *OR/MS Today*, pp. 22-26].

Implications

Reference books, textbooks, and academic journals are high priority targets for electronic publishing. Academic publishers have compiled impressive databases that can be used to produce customized college textbooks. In very little lead time, a manufacturer (publisher) will be able to provide an updated book to a professor's specifications. This same database concept allows academics to write in relatively small chunks, an appealing option to time-pressed academics, who write the majority of college textbooks. Widespread use of electronic publishing will have a major impact on authors, publishers and users in the academic community,

Robots Invade the Operating Room

Robots have proven to be very precise and accurate in applications on the factory floor. It stands to reason that robots would find their way into other applications that have high precision and accuracy requirements. Many surgical procedures require just this kind of high positioning tolerance. Thus robots become candidates for replacing the surgeon in such procedures. Robots have already been employed in that part of hip replacement surgery that involves drilling a hole in the thighbone so the hip implant can be attached. That's just the tip of the iceberg. In dozens of laboratories around the world, engineers and surgeons link robots to computer workstations and imaging equipment. The vision is that doctors, sitting at a computer manipulating a mouse, will perform robotic surgery from remote locations. Many surgeons are attracted to the idea of a robot assistant and are encouraging the testing of prototypes. Robots have also been employed to focus and contour radiation to the shape of tumors in cancer treatment procedures. Robots will play an important role in our health care future. [Baker, S. (October 4, 1993). A surgeon whose hands never shake, *Business Week*, pp. 111-114.]

Implications

Baker's message–robots are a health care requirement–is clear. But robots and robot surgeons do not come cheap. The U.S. is currently involved in debating the issues involved with revamping the health care system to stem the accelerating health care costs of the last decade or so. Although the opportunities for robotic surgery appear limitless, the ability to pay for them is not. Society needs to decide how many of these machines we can afford. We must be sensitive to the ethical issues of "who benefits and who pays" and other aspects of equity when considering the implementation of such expensive medical procedures. We believe our society will need guidance, probably best provided by the academic community. Intellectual tools must augment technological tools to help resolve these issues.

* * *

ECONOMIC

A.G. Stell Kefalas,
Professor of
Management
University of Georgia

The Triad's well-educated, healthy, mobile citizens were every marketer's dream: some 700 million materialistic humans who seem to have no saturation point.

Corporations' shift from multinational to global corporate strategy has redirected the managerial decision-makers' thinking so that they now view the globe as their own "oyster."

The Global Village Goes Beyond the Triad

As most undergraduate students who take Econ. 101 can verify, one of the basic economic "truths" is that "competition is good for you." Competition drives down prices, and that benefits consumers. Competition also increases quality and makes business more consumer conscious. Competition makes the customer "king."

To Customerize or not to Customerize: That *Isn't* the Question

In November 1993, *Fortune* magazine devoted a whole issue to the power of the consumer. "The Tough New Consumer: Demanding More and Getting It," devotes some 88 pages to documenting the various ways that U.S. firms have become "customerized." The issue promotes UNISYS's definition of the verb *customerize*: "kus'-te-me-rize/vt 1: to make a company more responsive to its customers and better able to attract new ones. 2: to customerize an organization's information strategy (e.g., to extend systems capabilities to field locations and other points of customer contact and support)." [UNISYS. (1993, Autumn/Winter). We'd like to put in a good word for the good government. Customerize. *Fortune*, p. 87.]

The customerization phenomenon is not confined within the U.S. national borders: the power of the customer has gone global. The Global Village gathers speed, says Mickey Kantor, the U.S. trade representative. [*Financial Times*. (1993, October 13), p. 11] Bill Saporito answers his own question in the *Fortune* special issue "Where the Global Action Is?" by saying "It may not be in the places you expect—or the places you know. To find tomorrow's runaway growth, broaden your vision." [*ibid.* p. 63.]

What might this vision be? To develop a modern *Global Vision* requires two main perspective view-transformations: the Triad world map and the Triad's shift in its economic activity.

Globalization: The First Wave

The first transformation consists of abandoning the pre-Gorbatsevian world map with the U.S. at its center and adopting a new world with the Triad at the center. This world view, *Globalization: The First Wave*, looks at the world as an economic triangle whose three sides are the U.S. and its satellite economies, Canada and Latin America; Japan and its satellite economies, the Pacific Basin; and the European Community and its satellite economies, the Eastern European countries. [Ohmae, K. (1985). *The triad power: The coming shape of global competition.*. New York: Free Press.]

The Triad (1980-1990) enjoyed the exclusive privileges of the 1000 kilos gorilla: it sat wherever it wanted. An exclusive group of the elite of the world, the so-called *OECD*ites (the 24 members of the Organization for Economic Cooperation and Development), consisting of less than 20% of the world's population, produced and consumed more than 80% of the world's wealth. The Triad's well-educated, healthy, mobile citizens were every marketer's dream: some 700 million materialistic humans who seem to have no saturation point and who respond nicely to a universal marketing mix of good products, low prices, high promotion, and easy distribution.

The Triad provided the most robust proof of the classical economist's assertion that "free trade is good for everybody" and of Benjamin Franklin's contention that "no nation ever went bankrupt because of international trade." As an unintended consequence it proved that competition and cooperation are complimentary, not antithetical, strategies. Corporate and government executives began seeing that to overcome the "businessman's dilemma," it pays to cooperate. [Koselka, R. (1993, October 11). Game theory revisited: How to succeed in business by being nice to your competition. *Forbes*, pp. 107-114.]

Globalization: The Second Wave

The changes that have taken place within the Triad reflect the shift of economic activity from its center to its periphery. All indicators of economic activity, such as production, employment, rising incomes and consumption, access to markets, credits, and general economic growth have been accelerating in the satellites of the Triad while remaining stagnant or even declining in the core nations. Businesses that had been spending a rather large percentage of their revenues to entice center customers to buy their products or services now have had to begin looking at their periphery customers and acknowledging the importance of this new factor.

Corporations' shift from multinational to global corporate strategy has redirected the managerial decision-makers' thinking so that they now view the globe as their own "oyster." The shift has resulted in the center getting its demanded products at very low prices and the periphery getting its desired employment for its deprived citizens.

A direct consequence of the rising employment is an increase in household incomes; and again,

While most of the industrialized world center rouses itself from recent economic slumber, many developing nations on the periphery are awake and working overtime.

simple macroeconomic theory and practice tells us that an increase in income (Y) will lead to an increase in investment (I) savings (S) and consumption (C). After all, the basic equation, $Y = C+I$ or $Y = C+S$, thus $S = I$, must be satisfied. Income must be recycled, either through the consumer or the investor markets. The end result of these two globalization waves is that "while most of the industrialized world center rouses itself from recent economic slumber, many developing nations on the periphery are awake and working overtime." [Sookdeo, R. (1993, October 18). The new global consumer in charts. *Fortune*, p. 68; also Zuckerman, L. (1993, October 18). The hum you hear is Asia growing. *The Wall Street Journal, p.* A12.]

Qué Pasa U.S.?

How has the U.S. fared in these transformations? Did the country ride both waves of globalization? If *U.S.* means just the business community, the answer is a definite "Yes." Yes—the business community participated in both transformations in a big way. U.S. investment, the main driver in these waves, has blossomed first in the center countries and second in the periphery. If *U.S.* means the government, the answer is also a "yes," albeit with a small "y." Finally, if *U.S.* means the public, the answer is confusion.

The idea of sovereignty, of "us vs. them," is ingrained in the average American's mind.

An example of this confusion is the North America Free Trade Agreement (NAFTA), originally a Republican bill. The present (Democratic) administration sponsored a slightly altered version, which informed citizens and businesses embraced as a vehicle to duplicate and enlarge benefits in trade and investment. But the idea of sovereignty, of "us vs. them," is ingrained in the average American's mind. Despite a pro-NAFTA media blitz, the warning of certain labor leaders and of individuals like Ross Perot, threatened defeat of the bill in the House of Representatives. A televised Perot-Al Gore debate and some presidential wheeling and dealing turned the tide. Final House vote for NAFTA passage: 234 to 200. Easy passage in the Senate followed. [Weintraub, S. (1993, October 6). NAFTA through the looking glass. *Wall Street Journal*, p. 6; Harbrect, D., Dunham, R. S., & Garland, S.B. (1993, November 8). NAFTA: Let's make a deal. *Business Week*, pp. 32-34; Carey, P. M. (1993, October). NAFTA or not, here we come. *International Business, 4* (10), pp. 46-52.]

The Bottom Line

Scanners know how to distinguish between fads and trends. Fads are a few events or points on a curve that have a short life span, whereas trends involve both many points on the curve and have a longer duration. Some trends are so pervasive that they alter fundamentals of human life and cannot be ignored. The global customer village is one of these trends. Those who ignore it will be faced with a discontinuity that might threaten their existence. Those who embrace it will reap the benefits that the new tough global customer provides. The U.S. is both the creator and the beneficiary of this trend. The day after the November 17 vote on NAFTA president Clinton hosted the Asia Pacific Economic Co-operation (APEC) meeting. Mickey Kantor summarized the current U.S. attitude towards globalization and cooperation as follows: "With APEC and NAFTA, the U.S. is taking advantage of the two fastest growing areas in the world: Asia and Latin America. Many of these countries have chosen, in recent years, to cast off the controls of their economies and the shackles of their political systems." [Kantor, M. (1993, October 13). Global village marches on. *Financial Times*, p. 11.]

Implications

With all these changes in the world of politics and especially in economics and its applied field, business administration, the question arises: How many U.S. institutions of higher education have undertaken curricula revisions to accommodate these trends? Do political scientists still place the U.S. at the center of the field? Do economic and management books still place the U.S. economy and U.S. business at the center of their framework? Does it really make any difference that Mexico 's economy is one-fifth the size of the U.S. economy when the latter grows very little if any and the former grows a lot?

* * *

ENVIRONMENTAL

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Ecologically Correct Education

In a recent review of the global environment, Tolba and El-Kholy (1992) conclude that despite twenty years of environmental concern and action, the condition of the world is worsening. Air and water pollution, fresh water and ozone depletion, coastal and marine degradation, deforestation and habitat loss, environmental hazards, toxic chemical and hazardous wastes–all present a gloomy future.

Scientists, environmentalists, politicians, economists, ministers and even comedians offer a plethora of solutions. Typically, opinions fall into three broad paradigms: scientific, spiritual, or political. The most prevailing solution offered is scientific, particularly in institutions of higher education, and the scientific approach usually embraces environmentalism.

Recent emphasis on environmental education for urban populations incorporates the concerns for multiculturalism, especially in matters of equity and justice. Environmental awareness, issues, and action in disparate populations sometimes conflicts with the scientific paradigm. At the last two international conferences of the North American Association of Environmental Educators (NAAEE), one held in Toronto in 1992, the other this fall in Montana, voices of indigenous peoples and minorities from North and South America (including both urban and rural regions), as well populations from other continents, joined together to voice their separate perspectives.

Their viewpoints, based on a more traditional lifestyle and heritage, often compete with those based on Western science and economics, which are perceived as reflections of imperialism that augment the oppression of non-Westerners. (See also Merchant, 1989.) As Gary Nabhan (1989, 1985) has found in his search for rare plants in the Sonoran Desert, the continuation of traditional non-Western lifeways have often preserved pockets of plant species once thought extinct. He suggests that perspectives and practices rooted in a non-Western cultural heritage can add creative and significant ideas to the environmental solution.

Nabhan suggests that perspectives and practices rooted in a non-Western cultural heritage can add creative and significant ideas to the environmental solution.

By acknowledging, encouraging and seriously considering these viewpoints alongside those of mainstream ideology, more equitable and just environmental resolutions can be reasonably attempted. As suggested by Cornel West (1993), "we need a cultural renaissance that gives moral meaning and social hope for citizens in a more free, just, and ecologically sound future." David Suzuki's book, ***Wisdom of the Elders: Honoring Sacred Native Visions of Nature*** (1992) echoes a similar plea from a Native American perspective. These views are not the only two competing for the ears of the dominant society. There are many more, if we will just be quiet long enough to listen and unbiased enough to consider.

Implications

The questions for higher education are simply stated but profound to answer: (1) What will we teach as "environmental education?" (2) Because schools, colleges, and universities educate by what they do as well as by what they say (Orr 1992), how will we "model" our environmental programs? (3) Is multiculturalism environmentally significant enough for us to incorporate issues of cultural heritage, justice and equity into all our "scientific" environmental programs?

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* * *

POLITICAL

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Upgrading Worker Skills

Colleges and universities, as well as freelancing faculty, are providing more job upgrading and job enriching training for workers. Employer training, currently amounting to $30 billion, amounts to about 1% of payroll. Outlays per capita by U.S. employers are less than one-half what German employers spend. Enhancing employee competency steadily escalates as global competition increases.

Community colleges have stepped into the breach. Next to on-site training by employers, community colleges are the largest providers of worker retraining. The competition is certain to grow as consultants, professional trainers, business and professional associates, labor unions, and others vie for a share of the market.

Community colleges have stepped into the breach. Next to on-site training by employers, community colleges are the largest providers of worker retraining.

The Consortium for Supplier Training, composed of giant companies such as Digital Equipment, Kodak, Motorola, and Xerox, has been shifting in-house training over to community colleges nationwide. Companies surveyed found community colleges were 10-20% less costly than professional trainers. Professional trainers and visiting educators typically charge $5,000 - $12, 000 per day, plus expenses.

Some companies handpick experts from many different sources, thereby securing top talent. AT&T found in-house programs cost $2,000 less than other programs per student.

State governments, historically the bellwether of innovative public policy solutions, provide a wide range of support for retraining programs. California and Illinois provide matching retraining grants. New Jersey and Texas raid unemployment insurance "surplus" funds to help support the workers' activities. [Therrien, L. (1993, September 20). Retooling American Workers, *Business Week*, pp. 76 - 77; Bongiorno, L. (1993, October 25). Corporate America's new lesson plan, *Business Week*, pp. 102 - 104.]

Implications

The breadth and pace of change is so pervasive and rapid that constant updating of job skills is required. Competitive rivalries demand ever higher skills. Political leaders, whose job it is to manage public education, will continue to search desperately for ways to upgrade worker competency. The need is compounded by the huge influx of immigrants, legal and illegal, whose very survival in this country is at stake.

Guaranteeing Refresher Education Results

Results-oriented student competency in certain technical programs is guaranteed by some community colleges. Students graduating from these programs are provided "refresher courses" until employers are satisfied with worker performance. [Therrien, L. (1993, Sept. 20). Retooling American workers, *Business Week*, pp. 76 - 77.]

Implications

Lack of accountability in education is an increasing concern. Qualitative criteria focused on education outcome increasingly will be demanded by political decision makers.

Managerial and Professional Employee Training

An important segment of the job training market, amounting to about $15 billion annually, involves formal training for managers and professionals.

Enrollment in executive programs at business schools is down somewhat. This drop is attributed to downsizing, cutbacks in overhead programs, and shifting training in-house. Leading business schools charge as much as $63,450 total tuition for executive MBA programs.

Some companies, including General Electric and Motorola, operate their own freestanding schools. The Management Development Institute (Crotonsville, N.Y.), run by GE, is particularly well known. One recent study points to a trend away from in-house campuses or buildings dedicated to training.

Another commonsense trend involves movement toward customized courses tailored to the client company's line of business, specific problems, or specific business objectives. Wharton Business School at the University of Pennsylvania reportedly derives about one-half of its revenues from executive education programs for such tailored programs. [Bongionmo, L. (1993, Oct. 250. Corporate America's new lesson plan, *Business Week*, pp. 102-104; Bongiorno, L. (1993, October 25). B-Schools bitten by the global bug, pp. 106-107.]

Escalating college enrollments lead to increasing public outcry for additional higher educational facilities, whereas public officials decry increasing outlays for higher education, particularly in light of the alleged looming surplus of overly-educated graduates.

Doing more with less will be a byword of the politicians throughout the 1990s.

Implications

As government revenues grow stingy, colleges and universities will need to seek additional funds to maintain their unique services. The emphasis in these programs will be less on seeking out knowledge for its own abstract importance and more on obtaining immediate, tangible, and practical results.

Does Higher Education Still Benefit the Student?

Upward mobility, increased affluence, and pursuit of the American Dream still are keyed to educational achievement. High school graduates pursuing higher education increased from 43% in 1950 to about 66% in 1992. College graduates, amounting to only 6% of Americans in 1950, increased to 21% of the population by 1992.

Is the U.S. facing a serious surplus of overeducated talent? Recent projections from Bureau of Labor Statistics (BLS) officials estimate that 30% of college graduates between 1993 and 2005 will either be unemployed or "educationally underutilized." The surplus of graduates is particularly acute in certain disciplines, such as law. [Elfin, M. (1993, October 4). Does college still Pay?, *U.S. News & World Report*, pp. 96-99.]

Implications

Change constantly imposes new demands upon society for costly public programs and facilities. Rampant crime and tougher sentencing dictate massive new construction of prisons to accommodate the burgeoning criminal population. By the same token, rising college enrollments lead to increasing public outcry for additional higher educational facilities, whereas public officials decry increasing outlays for higher education, particularly in light of the alleged looming surplus of overly-educated graduates.

Restructuring Sweeping Higher Education

Businesses have been leading the way in restructuring and revamping themselves. Public sector institutions, especially colleges and universities, are increasingly feeling pressure to undertake downsizing, out-sourcing, cost cutting, and accountability in productivity, standards, and results-oriented outcomes. The lingering pall of economic downturn and a snail-paced economic recovery force new organization and management realities. [Elfin, M. (1993, October 4). Does college still pay? *U.S. News & World Report* pp. 96-99.]

Implications

Economic hard times always usher in harsh reforms. Periodic revamping is an essential component of change processes. Politicians will demand that public sector follow private sector lead in revising old ways. Doing more with less will be a byword of the politicians throughout the 1990s.

Public Education Costs Outpacing Private Institution Counterparts

"College costs continue to climb," the College Board reports. Public college tuition and fees are up 8% this year. Private institution increases are 6%. [Tooley, J. (1993, October 11). Paying for college, *U.S. News & World Report*, pp. 84-86.]

Implications

The fact that costs for public higher education are growing faster than those for private education counterparts will not be lost on the politicians. Costs increases far in excess of the general rate of inflation sooner or later draw the ire of public policy makers as well as the public at large. Public higher education should prepare to justify the increases or offset the looming slashes in support.

Coping with College Costs

Eighteen years into the future, four-year attendance at a private college is projected to cost $176,616. This year tuition, fees, room and board at Brandeis University cost $25,585. Offsetting these outlays, 60% of the entering undergraduate class at Brandeis receive financial assistance.

Nationwide, undergraduate financial assistance currently is provided for 44% (7 million) of all students. Federal funds provide most of the support, which amounted to $23 billion in 1992.

President Clinton's community service program seeks to assist up to 100,000 students by 1996. Under this program, students obligate themselves to 1,700 hours of community service in exchange for $4,725 in tuition. [Tooley, J. (1993, October 11). Paying for college, *U.S. News & World Report*, pp. 84-86; Lord, M. (1993, October 11). Getting through the aid maze, *U.S. News & World Report*, pp. 86-89.]

Implications

Sticker shock is a sobering reality. A vast array of government assistance programs will be needed to ensure that the less financially endowed are not shut out.

COMMENTARY

Warren I. Cikins,
Vice Chairman
*National Committee
on Community
Corrections*

Crime Hysteria in the United States

What has happened to America?

As the ghetto deteriorates, homelessness increases, and the family disintegrates, we see a new growth industry in America of building and operating prisons instead of investing in low and moderate income housing. Despair and hopelessness among the poor grow by leaps and bounds, leading to the creation of millions of cocaine addicts and other substance-abusers.

This trend unfortunately, is mirrored on our college campuses. Federal and state corrections budgets now rival budgets for *education*, housing, employment, health, and infrastructure. Legislatures have not provided workable answers.

Academia and related institutions, with a major stake in the outcome of this struggle, are increasingly being heard from, albeit with conflicting input.

On the one hand, Princeton Professor and Brookings Institution nonresident scholar John J. DiIulio, Jr. in his May 13, 1992 *Wall Street Journal* article, "The Value of Prisons," *claims* that "the public, including solid majorities of black Americans, know the answer to crime-induced, inner city blight: imprison criminals." Conversely, University of Washington Professor of Law John O. Haley replies in a piece entitled "More Prisons, but Still More Crime," also in the *Wall Street Journal*: "Professor DiIulio ignores the failures and the costs of our current attempts to prevent crime by warehousing offenders. In Washington State, public expenditures to maintain the current system of prisons exceed the total cost of a community college system of more than 50 campuses."

Some solutions offered by academicians harken back to medieval times: for example, the "drawn-and-quartered" solution. Hang the remains on local lamp posts as a warning to others. These bloodthirsty historians overlook the fact that even then, the rate of robbery continued to climb.

The time has come for academia–the sane, but hopefully argumentative, sector–to get *far more* involved. A few institutes on criminal justice and the occasional course are not enough.

College officials must became innovative in coping. Current responses to criminalized offenses dangerously impact their students. Mandatory minimum sentences, the legal sector's response, will undoubtedly continue and possibly increase. Thousands of college students may be imprisoned for mandatory terms for possession of small amounts of drugs, and although every effort should be made to stamp out drugs on college campuses, the pressing concern is for university officials to warn students of the draconian punishments awaiting them.

Many Federal judges are caring and sensitive, but their hands are tied. Many elected officials are currently captivated by the upsurge in voters' demands for no-parole sentences.

University and college leaders will find some official backing for less restrictive responses to minor legal infringements on campus. Examples of this are found in (1) the leadership among the Federal judiciary of those like Judge Vincent Broderick of White Plains, NY, whose Judicial Conference of the U.S. works towards alternatives to mandatory minimums; (2) the leadership of Chief Justice Warren Burger, retired, whose cause has been providing literacy programs and rehabilitation to prison inmates, rather than what he terms "destructive trends in the treatment of the nation's wrongdoers."; (3) spreading widely the results of the Public Foundation's efforts. In the test states of Alabama, Delaware, and Pennsylvania, the foundation has worked with the public to prepare them to accept optional sanctions to not-a-risk-to-public-safety prisoners; and (4) indicating enthusiastic support for Attorney General Janet Reno's October 12 directive to the nation's 93 U.S. attorneys to consider a range of subjective factors before deciding which charges to bring.

Criminologists like Professor Don Gottfredson at Rutgers and Professor Norval Morris of the University of Chicago Law School, as well as the men and women who staff the National Committee on Community Corrections, are among those who can inform the academy at large and can lead us in the struggle to win public opinion. Drug treatment, job training, and experiments as yet untried must be allowed to substitute for the current expensive and unworkable dead-end sentence-prone policy. Otherwise, the 21st Century will see this country revert to the state of nature that Thomas Hobbes referred to as providing life that was "nasty, brutish and short."

Professor DiIulio ignores the failures and the costs of our current attempts to prevent crime by warehousing offenders. In Washington State, public expenditures to maintain the current system of prisons exceed the total cost of a community college system of more than 50 campuses.

* * *

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Periodicals Potpourri

In a recent issue of *Wired Magazine* (7/26/93), Seymour Papert eloquently asserts that schooling's historic 3 Rs will become an obsolete skill set in the coming media age. Portending his forthcoming book (*The Children's Machine: Rethinking School in the Age of the Computer*), Papert tells of his response to a four-year-old's question about how giraffes sleep. This query sent him on a journey through a variety of tomes, which allowed him to build a "knowledge web" about giraffes and from which he could suggest that giraffes probably sleep standing up. Today, the 4-year old couldn't learn on her own because she cannot read. Soon there will be no technical obstacle to a "Knowledge Machine" allowing a girl of four to "navigate through a virtual knowledge space where she could see for herself how giraffes live." From this premise Papert suggests that reading "will no longer be the unique primary access road to knowledge and learning, and it should therefore no longer be the dominant consideration in the design of school." Children who have grown up with the freedom to explore by machines will not "sit quietly through the standard curriculum dished out in most schools today."

Papert promotes integrated knowledge that can more accurately reflect real life to replace the compartmentalized, fact-based curriculum of historic schools that artificially define ". . . knowledge by subjects, children by grades, and achievement by test scores." He further argues for active involvement and experiential learning that grows from learner decisions. He blames the "loss of intellectual spark" among many of our youth on the uniformity imposed by schools, which ". . . suffocates those who have developed markedly different intellectual styles; much as it used to suffocate left-handed people by forcing them to 'write properly.'"

In the same issue, Paul Saffo "The Written Word is Flourishing Like Kudzu Vines at the Boundaries of the Digital Revolution") contends that the written word in its newest electronic manifestation causes the very type of active involvement and experiential learning that Papert urges. Unlike passive video-viewing, text requires active involvement because it ". . . invites our minds to complete the word-based images it serves up." Info-nets allow users to ". . . smash arbitrary print-centric boundaries among author, editor, and audience. These categories did not exist before the invention of moveable type, and they will not survive this decade. Just as monk scriveners once wrote, edited, and read, information-surfers browsing online services today routinely play all roles: selectively scanning, absorbing, editing, and creating on-the-fly in real time."

Memories of the 1950s sci-fi cover showing a space pirate boarding an intergalactic merchant ship with a slide rule clenched between his teeth should forewarn those of us who predict the future. However, the 3 Rs will almost certainly retain and perhaps even increase in importance in the future.

We already see the beginnings of knowledge machines in recent software like "The Adventures of Jasper Woodberry" and "Sim Ant." Despite cost hindrance, we can expect such experiential environments to help students develop "webs" of knowledge around topics in a far more natural way than through the rote memorization of unintegrated factoids. Further, much of future students' integrated knowledge base will probably come from text- and graphics-based communication with electronic pen pals around the world. This revolutionary use of *text* will drive students to read and 'rite and may change the very nature of students, from primary school through graduate school.

No, Dr. Papert–the 3 Rs will not become obsolete. But they will surely be handled differently in the type of future educational environments you help us envision.

Just as monk scriveners once wrote, edited, and read, information-surfers browsing online services today routinely play all roles: selectively scanning, absorbing, editing, and creating on-the-fly in real time.

* * *

BEST COPY AVAILABLE

Surviving in the 21st Century

Theo Leverenz,
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"We most see life as a journey," the authors advise, "because even the things that change must subsequently change again. We never 'get there'; we just move another few miles down the road."

Essayist Michael Lemonick asserts that "a fundamental change will be the almost complete breakdown of education's formal rigidity."

In their book, *Flight of the Buffalo* (1993), James Belasco and Ralph Stayer assert that what has gotten us where we are today will not get us where we need to be tomorrow. Put another way, "You can't see 'what can be' through the blinders of 'what is'" (p. 139).

Belasco and Stayer observe that the rate of change used to be much slower. Decades could pass before things were perceptibly different. Such is no longer the case. The pace is increasing far more quickly today, with no signs of letting up, heralding profound implications for us. The changes we make now may only be useful for a few months or years. "We must see life as a journey," the authors advise, "because even the things that change must subsequently change again. We never 'get there'; we just move another few miles down the road" (p. 81). Belasco and Stayer (1993) make a persuasive case that an organization's survival is directly, almost symbiotically, correlated with its flexibility and willingness to adapt.

This is not new advice to those involved in institutional strategic planning. Yet we would do well to heed Abraham Flexner's (1930) admonition: although colleges and universities are interwoven with the other fabric making up society's tapestry, they must exercise discernment when making decisions about how best to respond to and interact with that larger community. For Flexner, this means giving society what it *needs* is as important as giving society what it *wants*.

Perhaps with Flexner in mind, Charles Hardy cites George Bernard Shaw, who observed that "all progress depends on the *unreasonable* man." Shaw argued that "the *reasonable* man adapts himself to the world, while the unreasonable man persists in trying to adapt the world to himself" (Handy, 1990, pp. 4-5, as cited in the *AAHE Bulletin*, 1993, p. 7). Handy claims we are on the brink of an "Age of Unreason" wherein our survival will depend upon our ability to shape our future, rather than passively accepting a future shaped for us. We are, Handy says, entering a time "for thinking the unlikely and doing the unreasonable" (Handy, 1990, p. 5, as cited in the *AAHE Bulletin*, 1993, p. 7). Although survival may well depend upon how ably institutions adjust, truly successful institutions will be distinguished by how well they themselves shape that adjustment.

Are our institutions ready? Handy responds: "In our educational system we force-feed our students. We tell them what to do, where to go to class, what to learn, how to learn it, what to read, and what tests to take. Their role is to react." (*AAHE Bulletin*, p. 6) This is hardly appropriate pedagogy if the goal is to prepare students to be problem-solving, capable citizens in an "age of unreason," and competent shapers of their own futures.

In a special fall 1992 issue of *Time* entitled "2000: What to Expect in the New Millennium" (vol. 140, No. 27), essayist Michael Lemonick asserts that "a fundamental change will be the almost complete breakdown of education's formal rigidity" (pp. 59-60). Lemonick envisions instruction almost entirely tailored to the individual student (traditional and otherwise), self-paced and mastery-based progression of students towards program completion, replacement of degrees by various series of achievement goals, revival of the concept of apprenticeship programs, and an emphasis on mentoring and work/study co-op arrangements, among other changes.

If, in Belasco and Stayer's words, we take off our blinders of "what is" and squint a bit to see "what might be," how would we answer the question of what small colleges and universities should be doing to plan for the next millennium? For example:

- Curriculum. What new majors and minors would be offered, and what would be the content of these courses of study? Would our core education requirements be different? Would our academic calendar be different? Would there be more or fewer independent study opportunities? Would we offer the same degrees?
- Faculty. Would we need the same number of faculty? More? Fewer? Would we need the same kinds of faculty? If a different kind of faculty member were needed, would we seek to hire new or retrain existing faculty? Would faculty schedules be the same? How much instruction would take place in the residence halls? Physically off-campus? Electronically off-campus? How would evolving technology effect such matters as faculty course load, faculty-student ratio, and tenure?
- Resources. Would financial resources be allocated in the same way? If not, in what ways would the allocation be different? What additional resources would be needed, financial or otherwise? Would our library resources (including staff) need to be the same? How differently would library services be configured, packaged, and delivered? What would be the impact of 'wiring' our residence halls for access to internal and external library resources? Would this access change the content of the curriculum? The work required of students in individual courses?
- Staff and Support Activities. What sort of staff expertise would be needed to support this new institution? Would we invest in retraining or seek to attract appropriate new staff? Would an institu-

tion typically characterized by short, long, and traditional-length courses manage residence halls and food services in the same way? Would a residence hall be reserved for participants in various ongoing special topic "institutes"? Who would be the "typical" financial aid recipients? Would their needs be the same? In what ways would administrative lines of authority need to change?

- Admissions. Aside from academic preparation (a whole other line of questioning in itself), would we recruit demographically the same kind of student? What would our admissions team look like? Would it need any special expertise? Would it be based on campus, or tele-commute to the college, physically being on campus only a couple of times each month? Would we recruit in the same way? How would our PR material efforts change? How would our PR be delivered—electronically (e.g., available to anyone with a computer and modem), in print, or as a combination of the two?

Today's paradigms are simply not adequate for tomorrow's challenges. The question is, how "unreasonable" are our educational institutions willing to be in order to survive?

[References cited: Belasco, J. A. & Stayer, R. C. (1993). *Flight of the buffalo.* New York: Warner Books, Inc.; Flexner, A. (1930). *Universities: American, English, German.* New York: Oxford University Press; Interview with Charles Handy. (1993, September). Upside-down thinking. *AAHE Bulletin, 46* (1), 3-7.; Handy, C. (1990). *The age of unreason.* Cambridge: Harvard Business School; Special issue (1992). Beyond the year 2000: What to expect in the new millennium, *Time, 140* (27)]

TOOLS

Do-it-yourself educational software

Bernard Glassman
Pragmatix: Information Design

Computer Tutor, an instructional software authoring system developed by CAPE Associates in Salt Lake City, Utah, is remarkable in two ways that deserve our attention as planners.

First, it can be used on even the most elementary IBM or compatible, making the equipment that has sat in closets for years no longer obsolete. Second, it is so easy to use that any instructor who knows his or her material can develop instructional programs with little or no preparation and no special knowledge of the computer. These are significant breakthroughs. As a planner, you have reason to expect that this is the kind of software that will proliferate and improve.

As a planner, you have reason to expect that this is the kind of software that will proliferate and improve.

I asked Roger Bodo, an instructional design specialist, to help me evaluate the Computer Tutor package, along with an instructor at North Carolina's Elon College, a nonspecialist in computers. Together, they put the Computer Tutor program to work in the classroom.

The two were amazed to find that although Computer Tutor costs as little as $300 for a licensed developer's copy, using the program they were able to deliver instructional material, formulate tests and keep all the student use and outcome data an instructor (or school administrator) could want—aggregated to the student, class, school or campus. Computer Tutor provides both formative and summative evaluation (how are they doing?, how did they do?), which can be instrumental in giving timely, corrective feedback to students or to instructors.

As Bodo said, "Computer Tutor is simple to use. The program took little computing power; it is instructionally well designed. Computer Tutor addresses several levels of the learning hierarchy and employs them very effectively."

The Elon instructor found that Computer Tutor produces results for the students. The group Bodo tested loved it.

Each received a diskette with her or his name on it. They felt special. Best of all they used their disks, and their test results reflected the degree to which each person used the lessons.

"Computer Tutor produces results for instructors," Bodo added. "Data collected and merged from the student disks helped in teaching the present class and in building a body of instructional material and information."

Computer Tutor authors, Gerald Smith and Jerry Debenham, were obviously sensitive to the fact that not all students can or will use a computer lab, and that many students have access only to the most rudimentary computers.

According to Bodo, the average teacher should be able to produce the first tutorial and quiz after a couple of evenings sitting down at the computer, reading the manual and experimenting. Another plus–the Computer Tutor has a tutorial (a lesson titled ATutor) that teaches the teacher how to use the program.

Computer Tutor's authoring concept assumes the existence of a separate text or texts that the student is being held accountable for learning. Everything entered into the program is taken from the text or referenced to it. The instructor-author selects from a series of options, such as whether to use math functions; to define terms; and, when writing essay questions, to stipulate any or all of

Bodo notes that the instructor-author can also set the degree of help and hints the students may receive, can construct essay questions or let the computer do it for them, and can automatically produce printed tests.

the key words that must be used in a properly drafted response; the instructor is also assisted in determining the criteria that must be met to get 100% on any given question.

Bodo notes that the instructor-author can also set the degree of help and hints the students may receive, can construct essay questions or let the computer do it for them, and can automatically produce printed tests for use as quizzes and exams. If the test encompasses several units, the computer will randomly select items from among the units. The instructor-author can have as much input as he or she desires.

I thank my collaborators in this joint effort to introduce the new tool, Computer Tutor. To round out the good features noted, I would add that Computer Tutor's record-keeping functions facilitate the measurement of mastery and provide invaluable formative and summative information. The main program produces comprehensive information for the instructor and departmental leaders; it has a low learning curve, provides ease of use, and operates across a broad range of DOS-based PCs. Under the $300 license fee, instructors are free to distribute disks to their students. Under a site license fee of $1,000 plus $5 per machine, complete packages may be produced and sold for $15 or less per package, which can generate a modest per-diskette income for the school and instructor-authors.

In computing lingo, for a little input Computer Tutor generates a lot of output. It's well worth considering as an enhancement for teachers and students of all levels.

Computer Tutor
CAPE Associates
4911 Emigration Canyon
Salt Lake City, UT 84108

Workshops, counseling and courseware are also available from CAPE. For more information:
Gerald Smith—(801)581-8132
Jerry Debenham—(801)943-4300

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On the Horizon

The Strategic Management of Higher Education: Lessons from Corporate Experience

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Wolf Enterprises
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The current corporate emphasis has clearly shifted from *strategic planning* toward *strategic thinking* and *strategic management* (the integration of strategic thinking and operational action in a seamless web).

In the spring of 1993 I surveyed nearly fifty global corporations in an effort to get some fix on their experience, thinking, and current practices in strategic planning. My survey elicited responses from 46 major corporations, almost equally divided among North America, Europe, and Japan. Although I could not claim that this was a statistically representative sample, the stature of the companies (including many globally known names) and the thoughtfulness of their responses lend weight to the findings. One key result that emerged was a broad corporate consensus on seven basic principles that might be said to constitute the best practices of management and planning. Briefly summarized, these are:

1. *The strategic planning process should be visionary in the sense that executives' strategic vision must be the driving force of the whole management process.* There are two principles embedded in this practice. First, the real planners must be line managers, the ones who will have to execute the plans, *not* staff planners, however capable and well-intentioned. Second, the plans should be imbued with a dynamic and coherent vision of what the organization can and should become in the future, in order to generate enthusiasm and commitment and guide the actions of everyone in the organization.
2. *Scenario planning is now a desirable, maybe essential, part of strategic thinking.* Given the prevalence of uncertainty and discontinuous change in the planning environment, it no longer makes sense to base long-term strategy on a single-point forecast. Strategy should be developed and tested in a framework of alternative possible futures that the organization may have to deal with.
3. *Strategy development should aim to resolve the key strategic issues confronting the organization.* Strategic thinking is a highly focused activity, concentrating on the major make-or-break issues that must be resolved if the organization is to succeed. By clearly identifying the priorities for action, executives sharpen the decision focus of the whole strategy development process and reinforce the thrust toward action.
4. *Given the increasing strategic importance of technology, strategic management must leverage technology pervasively and effectively as a prime source of competitive advantage.* The old concept of keeping technology in the corporate research and development laboratories has now given way to the far broader concept of applying technology at every stage of the value-added chain.
5. *Strategy should be a matter of choice, so the process should force the development and evaluation of a range of strategy options.* One of the problems with single-point forecasting is that it tends to reinforce the belief that incremental changes in strategy will suffice. That may have been adequate in times of relative stability; but times of discontinuous change demand that we at least consider, and choose among, radically different strategies.
6. *The process must be results-oriented, translating strategies into action plans and action plans into performance.* "The plan" is clearly not an end in itself: it must be a road map for organizational transformation. By stressing this orientation, we create a bias, from the outset, toward practicality, action, and implementation.
7. *Organization and culture are keys to the success of both strategic thinking and implementation.* Successful execution of strategies and competitive advantage flow from developing an organization structure and culture that are strategically oriented.

Are there any lessons that educational institutions can learn from this summary of best practices of management and planning in the corporate world?

I am convinced that there *is* some common ground, starting with the definition of exactly what we are talking about. The current corporate emphasis has clearly shifted from *strategic planning* (an annual cycle of planning documents) toward *strategic thinking* (a change in mindset and attitude toward the organization and its environment) and *strategic management* (the integration of strategic thinking and operational action in a

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One of the best practices of current corporate strategic planning is its emphasis on creating—and communicating—a shared vision of the future organization.

Vision provides us with a clear sense of where we want to go: scenarios remind us that we must remain flexible as to how we get there and what we may encounter along the way.

seamless web). This emphasis is assuredly the right one for colleges and universities, as it is for companies. There can be no real value in plans per se, only in the thinking that goes into them and the action that flows from them.

A second commonality is the need. Michael Porter of the Harvard Business School maintains that "the need for strategic thinking has never been greater." In the corporate world, this need stems from the advent of new technology, the intensification of global competition, moves toward deregulation and market economies, changing consumer wants, and seismic shifts on the geopolitical scene, all leading to the restructuring of companies, radical shifts in strategy and market positioning, and changes in technology and culture.

How does all this apply to higher education? A comparable list of restructuring forces that are at work in this sector would include economic and competitive pressures, changing social and work force expectations, and the impact of information technology and government policies (See Wilson, 1992). In both the business and the educational sectors it is easy, but misleading, to argue that the prime need is to attend to short-term economics (controlling costs, reducing staff, stabilizing prices/fees, etc.). In the face of such major changes and uncertainties in the environment, the greater need is for strategic rethinking of an organization's longer-term purpose, structure, and positioning (What market does it aim for? On what basis does it intend to compete?). In reality, this is not an either-or proposition. Strategic management insists on confronting and resolving *both* the short-term problems and the long-term issues. It is simply unacceptable and unrealistic to believe that, in the face of radical external changes, a short-term internal focus can any longer suffice.

Leaders in higher education can learn from corporate executives' growing recognition of the power of strategic vision. One of the best practices of current corporate strategic planning is its emphasis on creating and communicating a shared vision of the future organization. Vision, in this context, is more than Webster's "something seen in a dream, ecstasy, trance, or the like." Rather it is a coherent and powerful statement of what the organization can and should be ten years hence (the time horizon varies, of course, to suit the organization).

It is the prevailing move toward restructuring that makes vision so important. With incremental change, those associated with an organization (executives, employees, customers, share owners; administration, faculty, students, alumni) can reasonably act on the presumption that there will be a basic stability to the organization. But with radical change, that may no longer be the case: restructuring gives rise to such strategic questions as "To what purpose? How? What lies at the end of it?" It becomes vitally important for the vision to answer such questions, to paint a clear and coherent picture of the size, shape, style, texture of the future organization, and the how of achieving this picture to give all those involved a detailed feel for what the future holds. Vision thus becomes the capstone of the strategic planning (or thinking) process, and the start of the implementation phase: when broadly communicated, vision can generate understanding and commitment, motivate performance, and guide the daily decisions and actions of all participants.

Another practice that is eminently transferable from the corporate to the educational sector comes from the field of methodology: scenario planning. Like vision, scenarios derive their importance for strategic thinking from uncertainties, discontinuities and restructuring. A forecast of what the future has in store is no longer viable; it is unreasonable to expect certainty (a single-point forecast) in an uncertain world. Scenarios provide us with an alternative both to a false sense of certainty and to giving-up on an unknowable future. They force us to speculate about alternative futures that might emerge from the uncertainties and so to develop strategies that are more resilient and in tune with the future. By focusing our attention on the branching points of the future, they open us up to the possibility of discontinuities and to the need for contingency planning. Vision provides us with a clear sense of where we want to go: scenarios remind us that we must remain flexible as to how we get there and what we may encounter along the way.

The commonalities between the two sectors should be clear. Transferring a planning system from one organization to another is not a simple matter. That was a mistake that many corporations made in the Seventies, nearly leading to the early demise of strategic planning. Rather, it is a matter of thinking through the similarities in our experiences (e.g., restructuring) and our needs (e.g., for vision, flexibility, new approaches), and a process of creative adaptation of the lessons to the particular culture and situation of the institutions to which we belong.

[Wilson, I. (1992, December). A new social charter for higher education? *On the Horizon, 1(2),* 1,3.]

FROM THE EDITOR

James L. Morrison
The University of North Carolina at Chapel Hill

Ian Wilson in the lead article argues convincingly that in this period of rapid change we should shift from strategic planning to strategic thinking and strategic management. Henry Mintzberg (1994), in an article appearing in the latest issue of the *Harvard Business Review* titled "The Fall and Rise of Strategic Planning," states that the label *strategic planning* should be dropped because strategic planning has impeded strategic thinking.

Mintzberg's argument is as follows: strategic planning is about analysis (i.e., breaking down a goal into steps, designing how the steps may be implemented, and estimating the anticipated consequences of each step). Strategic thinking is about synthesis, about using intuition and creativity to formulate an integrated perspective, a vision, of where the organization should be heading. The problem is that strategic planning proponents believe that analysis encompasses synthesis; that in the best practice, strategic planning, strategic thinking, and strategy making are synonymous. This belief, in turn, rests on the assumptions that prediction is possible and that the strategy-making process can be formalized.

Mintzberg argues, and Wilson would probably agree, that predicting seasons of the year is simple, but predicting discontinuities, such as a technological innovation, is difficult, if not impossible. Moreover, Mintzberg maintains, formalizing a strategy implies a sequence from analysis through procedure to action. Certainly we do think in order to act; but also we sometimes act in order to think. We experiment; those experiments that

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Planners should supply the data that strategic thinking requires, should act as catalysts who support strategy making by aiding and encouraging managers to think strategically, and should help specify the implementation steps needed to carry out the strategic vision.

Presidents, chancellors, provosts, and deans should focus on strategic thinking and strategic management, on developing a shared vision for their school.

work converge into patterns that become strategies. To Mintzberg, the essence of strategy making is the process of learning as we act. Formal systems can never internalize, comprehend, or synthesize hard information. Thus planning can not "learn." Mintzberg says, "Strategies can develop inadvertently, without the conscious intention of senior management, often through a process of learning. . . . Learning inevitably plays *a*, if not *the*, crucial role in the development of novel strategies (p. 111)."

Mintzberg sees strategic planning as practiced, as strategic programming—articulating and elaborating strategies that already exist. When managers comprehend the difference between planning and strategic thinking, it is possible to return to what the strategy-making process should be: "capturing what the manager learns from all sources (both the soft insights from his or her personal experiences and the experiences of others throughout the organization and the hard data from market research and the like) and then synthesizing that learning into a vision of the direction that the business should pursue (p. 107)."

Mintzberg does not mean we should get rid of the planners. Instead, those with planning responsibilities should make their contribution around the strategy-making process rather than inside it. Planners should supply the data that strategic thinking requires, should act as catalysts who support strategy-making by aiding and encouraging managers to think strategically, and should help specify the implementation steps needed to carry out the strategic vision.

Mintzberg distinguishes between planners and managers. Planners do not have authority to make commitments, nor do they have managers' access to that "soft" information critical to strategy making. Managers are under time pressure to make decisions, to act, not reflect; they may overlook important analytical information. Planners have the time and the inclination to analyze. Their role should be to pose the right questions rather than to find the right answers, opening complex issues for thoughtful consideration. Planners should function as strategy finders, analysts, and catalysts. Planners should encourage managers to think about the future in creative ways, to question conventional wisdom, to raise difficult questions, to challenge conventional assumptions, and to help themselves out of conceptual ruts. Mintzberg cites Arie de Geus (1988), onetime head of planning at Royal Dutch Shell, in a classic article titled "Planning as Learning," as arguing that the real purpose of planning is to change the mental models that decision makers carry in their heads.

What are the implications of the Wilson and Mintzberg arguments for college and university leaders? First, presidents, chancellors, provosts, and deans should focus on strategic thinking and strategic management, on developing a shared vision for their school. Their colleagues with "planning" either in their title or in their assigned responsibilities should function in the role of planners as described by Mintzberg. They should not be told, "Draft the plan." Such commandments usually result in another document for the archives.

There are a number of tools available to planners to assist them in helping senior administrators think strategically. Ian Wilson points to visioning and scenarios. Perhaps Ian will present a seminar through the UNC Institute for Academic and Professional Leadership on these topics.

On the Horizon itself can serve as a tool. Our editorial board is charged with identifying signals of change in specific sectors of the macroenvironment (social, technological, economic, environmental, and political) and suggesting their implications for higher education. Our lead articles focus more broadly on what is on the horizon that can affect colleges and universities, as do our pieces in Commentary. The Situation Room focuses on emerging issues and on issues management techniques. We have begun a new section in this issue: The Internet. In the next issue, we will began another section: Methods and Techniques. In the April issue for example, Mark Champion and James Rieley will describe their experience with environmental scanning and with Hoshin planning respectively as two approaches to effective planning.

If you wish to contribute an article, please send me an 800-1200 word manuscript for our review. As always we welcome your comments and suggestions as to how we can make *On the Horizon* more useful to you.

[References: Mintzberg, H. (1994, January-February). The fall and rise of strategic planning. *Harvard Business Review*, 107-114; DeGeus, A. P. (1988, March/April). Planning as learning. *Harvard Business Review* , 70-74.]

* * *

SOCIAL

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The success of those companies experimenting with flextime schedules, however, means that flexible scheduling of work time is becoming incorporated as a strategic business tool.

It may be time for more institutions to focus the efforts of departments of sociology, political science, criminal justice, and social work on more in-depth research on the many facets of violence.

Flexible Schedules Energize the Work Force

Currently, many of America's major corporations are experimenting with flexibility in work schedules for employees. They have found that:

- Employees are more energized when they have schedules that help them meet out-of-work responsibilities.
- Employees feel a greater commitment to achieve higher standards of quality.
- Employees have fewer absences (by one-third at Xerox).
- Employees assume more responsibility for their performance through collaboration with supervisors.
- Employees exhibit more teamwork with each other and with supervisors.

Employees like flexible schedules. GTE found that 61% of their workers had looked for other jobs that offered such schedules.

There continue to be critics of flextime. They question flexscheduling's effectiveness: Are employees really working if the employer cannot see them? Can safety standards be assured? Will productivity of employees diminish without a structured environment and office socialization? How can employers administer unusual around-the-clock schedules?

The success of those companies experimenting with flextime schedules, however, means that flexible scheduling of work time is becoming incorporated as a strategic business tool. [More companies experiment with worker's schedules. (1994, January 13). *The Wall Street Journal*, p. B1.]

Implications

The trend of flexible work schedules and nontraditional work environments is being driven upward by the telecommunications and technological revolutions. This trend is also driven by the increase of women in the workforce, the increase in single family households, and increased traffic congestion in metropolitan areas. Faculty members have traditionally had flexible schedules. Students enjoy flexible scheduling as colleges and universities increasingly offer night and weekend classes for an older, diverse, student population. Given the available technology and the same conditions affecting the corporate workforce, it may be time for institutions of higher education to consider flexible scheduling for administrative and professional staffs.

Crime: Quality of Life and Violence in the Media

In 1954, the United States Congress held the first hearings on violence in the media, a problem researched and analyzed by social scientists for the past four decades. Although previous attempts to link violence on television to aggression and violence in society established minimal connections, current research suggests that the entire population's exposure to television violence and its propensity towards violence has increased homicide rates. One result of these studies was an agreement by the four networks, (NBC, CBS, ABC, and Fox) to label high violence programming.

A debate rages about imposing censorship as a solution to violence on television. Some of the most adamant antiviolence activists reject legal censorship in favor of "corporate responsibility." Researchers question the effectiveness of censorship in the modern electronic era. The public is being exposed to violence through cable networks, interactive multimedia, information highways, and home satellite services. Although regulation would permit the government to remove a commodity that has been proven to cause harm to society (violence), it raises a constitutional question. Stringent laws and regulations that mandate the free flow of information conflict with First Amendment guarantees and freedom of the press.

One issue often neglected by the industry, its supporters, and antiviolence activists, is culture. Cultural changes have always played a significant role in influencing the media and vice-versa. Leaders and citizens in all sectors, at all levels of government and industry, should initiate movement towards goals that will enhance and improve quality of life in America, de-emphasize violence, and work to decrease violent crime. [Bayles, M. (1993, Fall). Fake blood: Why nothing gets done about media violence. *Brookings Review*, 20-23.]

Implications

Violence is neither new nor easily resolved. The media is both a cause and a reflection of violence in our society. Reforms in our educational, prison and judicial systems may resurrect traditional values.

What can college and university leaders do about violence in society? Enhancing security measures on campus (lighting, crime awareness education, increased campus security measures) is being driven to some extent by successful lawsuits by students or parents of students who have been assaulted on campus. It may be time for more institutions to focus the efforts of departments of sociology, political science, criminal justice, and social work on more in-depth research and analysis and seek external funding to establish interdisciplinary research and policy centers for the study of violence.

On the local level, institutional leaders should continue to cooperate with local police to study and formulate community action policies and programs. Perhaps institutions should plan to use the resources of the Federal Corporation for National Service to aggressively recruit potential students to work in these programs when that agency comes on line. [See Cikins, W. I. (1993, October). President Clinton's national service proposal. *On the Horizon*, *2*, 14-15.]

* * *

TECHNOLOGICAL

Wally Albers

Albers Systems, Inc.

Groupware Goes Beyond E-Mail

Groupware is the hottest thing in software these days according to David Kirkpatrick of *Fortune* magazine. Whereas e-mail allows one-to-one or one-to-many communication, groupware goes one step further: many-to-many communication. With *Groupware*, groups can work together as project teams in real time from remote locations; decision-making groups can similarly interact in real time again from remote locations. The basic groupware package is Lotus Notes, which combines a sophisticated messaging system with a giant data base containing work records, memos and other information sources. Complementary software includes workflow, meeting and scheduling packages. Preliminary studies have indicated that these groupware systems when integrated are capable of shortening the time it takes a group to complete a project or make a decision by as much as 90%, a tremendous gain in efficiency. [Kirkpatrick, D. (1993, December 27). Groupware goes boom, *Fortune*, pp. 99-106.]

Groupware is the hottest thing in software . . .

Implications

Applications of groupware, confined principally to corporate organizations to date, have been found to change business processes and is driving the trend toward flatter organizations. In addition, there is a substantial reduction in the turnaround time in responding to customers' requests that involve a decision or a collective action, such as the approval of a loan request from a financial institution.

In higher education, where much of policymaking involves committee interactions and group decisions, policy administration might be rendered more responsive, more productive, and more efficient through the implementation of groupware. It would be prudent for higher education planners to consider incorporating groupware in updating their administrative processes.

A Sociopolitically Correct Automobile

Recently President Clinton officially joined with the Big Three of the U.S. automobile industry, General Motors, Ford, and Chrysler, to announce an historic new public/private partnership. The goal of this project is the development of a new generation of vehicles that can achieve fuel efficiencies of approximately 80 miles per gallon while costing no more to own, drive and maintain than today's comparable vehicles and without sacrificing performance, size, utility or ability to meet emission and safety requirements. This is one of several attempts by the Clinton/Gore administration to involve government in coordinating the efforts of America's best scientists and engineers to work toward common goals.

America's national laboratories will be called upon to redirect their expertise toward this major peacetime challenge, making available technologies previously available only for national defense.

Meeting the objectives of this ambitious program requires an aggressive pursuit of new technology development. All parties agree that there is no certainty that these technologies can be developed while simultaneously meeting the program goals of affordability, utility, performance, safety and emissions reductions.

Significant infrastructure changes may also be needed to enable industry to commercialize the new class of vehicle. The public/private representatives have formalized their commitment through a Declaration of Intent. Government involvement will be coordinated by the Undersecretary of Commerce for Technology; auto industry involvement will be coordinated by the United States Council for Automotive Research. [Reed, D. (December 1993). A new generation of vehicles, *Automotive Engineering*, p. 25.]

A federal government/private sector partnership signals an unprecedented approach to the establishment of a national technology and/or industrial policy.

Implications

A federal government/private sector partnership signals an unprecedented approach to the establishment of a national technology and/or industrial policy. Until now the U.S. technology policy limited any federal/private sector partnership to so-called precompetitive activities, activities of research and development that would not cross the businessline of competition. The partnership described above clearly goes far beyond that and has rather specific commercialization goals.

In addition, the federal government has traditionally avoided a national industrial policy so as to avoid favoring one particular industrial sector over another. The announcement of the "sociopolitically correct" automotive vehicle program suggests a direct step on the part of the U.S. government into a particular competitive industrial sector, namely vehicle manufacture.

A final implication has a negative aspect for advanced-level educators, namely the absence of participation of academics in the announcement of this new partnership. If the U.S. government is truly trying to mobilize the ***best scientists and engineers*** to meet this important national goal, the federal/private partnership should be calling on institutions of higher education. Some of the best scientists and engineers are on these faculties. It would be in their best interests to take immediate steps to pursue a much more active role of involvement in the shaping of national technical and industrial policy.

* * *

ECONOMIC

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Working in the 21st Century: A Reconceptualization

Graduates of the classes of 1994 will need to make three basic resolutions:

Resolution 1. Stop believing the myth that the more things change the more they remain the same.

Resolution 2. Stop believing that the U.S. Department of Labor gives you an accurate picture of the changes in the labor market.

Resolution 3. Take hold of your own destiny. "Nobody owes you nothing." A university degree is no guarantee for a job and a job is no guarantee for survival.

A university degree is no guarantee for a job and a job is no guarantee for survival.

The Conceptual Framework

In the conventional economic framework, an economy is the combined effort of three interacting sectors. The first sector, the Private Sector, is the totality of private business corporations. The second sector, the Public Sector, is represented by the totality of efforts by public institutions (government and non-government agencies) that aim at satisfying the needs of the people within their national boundaries. The last sector, the International Sector, encompasses the exchange of goods, services and money between the U.S. and the rest of the world. The monetary value of the activities of all these sectors is called the Gross National (Domestic) Product (GNP or GDP).

The last fifteen or so years witnessed a great number of changes. Most official accounts focus on their frequency and magnitude. "Ordinary" people contemplate the consequences of these changes in the quality and quantity of their life. One exceedingly important attribute of these changes seems to have escaped the measuring systems of economists and sociologists. This attribute concerns the society's ability to return to the state of its former equilibrium after the disturbance. If the change takes the system to a new state that is qualitatively different from its conventional state, the change has an irreversible effect upon the system.

The Conventional View

Economists represent the economy in the following equation:

$$GDP = Y [C+I] + [T-G] + [X-M]$$

In this equation, Y= National Income, C= Consumption, I=Investment [or S= Savings], T= Taxes, G= Government Expenditures, X= Exports, M= Imports, C+I=the Private Sector, T-G=The Public Sector, X-M=The International Sector.

Governments around the world keep track of the changes in private, public, and international sectors. Meticulous statistics are kept on both the individual variables of each sector and the *state* of the sector as measured by the net result of the interaction of the variables. For example, statistics are readily available on the amount and change on Consumption, Savings and Investment, Taxes and Government Revenues, and Exports and Imports. Governments report quarterly figures on the deficits or surplus of these sectors.

The Unconventional View

Because of our total preoccupation with what some consider statistical sleight-of-hand, we may have not noticed certain rather dramatic changes. Peter Drucker, in *The New Realities*, alluded to these changes some ten years ago and called them discontinuities.

The Private Sector

The private sector is composed of the consumers or savers and the producers or investors—people and business. In this system, people exchange their assets, mostly their free time and their excess money (i.e., what is left over after consumption) for returns in the form of wages and dividends. Although the basic modus operandi of this

Labor losses in the private and public sectors in the developed countries were converted into labor gains in the international sector. One by one, labor intensive, low technology productive processes were relocated to foreign countries, where labor costs were lower.

exchange has not changed, private enterprise has undergone some dramatic and irreversible changes.

Between 1945 and 1980, a period of continuous expansion and addition of workers, U.S. organizations began restructuring to meet global competition. The most noteworthy event, yet undetected by most observers of business, is the irreversible change in the management world view. This restructuring runs along two dimensions: *globalization* and *informatization*. The end result, and the most tangible one, of this restructuring has been a reduction in the number of workers creating a national "joblessness growth."

In the last five years alone the Fortune 500 club eliminated some 4.4 million jobs, about one of every four once provided. [Feinmann, Jaclyn, *Fortune* (1994, January 24), p. 30–36.]

The Message: Do more with less, mostly less labor.

The Public Sector

Under the rubric of privatization, governments around the globe began disinvesting and turning over their people-serving activities to the private sector. Although some of these privatizations were motivated by the desire to raise money to ease public debt, most of the motivation reflected the belief that the private enterprise can do more with less, mostly less labor.

The Message: Do less with less, mostly less labor.

The International Sector

Labor losses in the private and public sectors in the developed countries were converted into labor gains in the international sector. One by one, labor intensive, low technology productive processes were relocated to foreign countries, where labor costs were lower. The product-output of these processes returned to developed countries for marketing and higher profitability.

The Message: Do more with more, mostly more cheap labor for more profitability.

Charles Handy, a maverick at the London School of Business, presents an unusual description of the transformation of the workplace that accompanied these irreversible changes in the three sectors of the world's economies. Amplifying to some extent the messages in Drucker's *The Age of Discontinuity* and Tom Peters' *A World Turned Upside-Down*, Handy stitches together a tapestry of his "scattered organization," or, using the analogy of his native land's mascot, the Shamrock Organization. [Handy, C. (1989). *The age of unreason*. Cambridge: Harvard Business School Press.]

The One-Job-for-a-Lifetime Era

Handy noted that at the beginning of this century a typical worker would fall into the 47×47×47=103,823 model. In other words, the worker will work 47 hours a week for 47 weeks and 47 years. In addition and more important, all of these 103,823 hours will be earned with the same organization.

The Two-to-Three-Jobs-in-a-Lifetime Era

By the mid 20th century the length of the job life shrank to about 50,000 hours—for example, 37 years, 37×37×37=50,653 rounded to 50,000 hours. There are many variations of the formula, but the point is that the individual will have an opportunity to "play" with three components of the "job life." For example, there may be 45 hours for 45 weeks and for just 25 years [45×45×25=again about 50,000] or ten years in one job for 47 hours a week for 47 weeks, for some 23,000 hours. The person might then quit, go to school or start a family and then go back for another stint with another company for another 12 years.

The Shamrock Organization Era

Currently most organizations resemble Handy's three-leaf shamrock. The first leaf represents the two scenarios (lifetime eras) outlined above. Workers here are of the "core" type. They joined the organizations with the intention of putting-in their time. The core workforce is currently half its size, gets paid twice as much, and produces three-to-four times as much as before. These are the empowered workers. They are asked to participate in the organization's decision making process and are expected to be serious and very responsible about their participation, to identify and solve problems. They are also given the tools, mostly information technology. They are the Gold-Collar workers, life-long-learners.

The second leaf is represented by the subcontractors, professionals who have opted for one of the many combinations of the second scenario. After putting some 50,000 hours in one or perhaps a few companies, they engage in subcontracting relationships. These are the "smart" people who understood the full implications of the downsizing trend; instead of waiting to be sacked, they latched on to technological advances and now represent a combination of modern methods and contractual loyalty.

The third leaf are the so-called temps, or as the younger generation calls them, the tempies. These people are called politely the contingency workforce; they enjoy the flexibility of an as-they-wish work calendar, but are also realistically known as the disposable or throwaway workers. [*Fortune*. (1994, January 24), pp.30-36.]

Message: The 3-pronged workworld (Shamrock) bears watching for the future.

Editor's note: this is the first of a two-part essay. Professor Kefalas will conclude the essay in the April issue with an analysis of the implications for higher education.

* * *

ENVIRONMENTAL

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The term environmental issues usually connotes large-scale problems—air and water pollution, deforestation, habitat loss, chemical and hazardous wastes. Equally troublesome, yet perhaps more insidious, are the issues that concern environmental behaviorialists—the myriad ways the environment influences human behavior and emotions. In a fascinating collection of the latest research on the behavioral effects of environment, Winifred Gallagher (1993) presents some startling and surprising studies that highlight the importance of our physical environment to our mental well-being.

Over millions of years, human beings have adapted predictable biochemical and cultural methods to respond to the cycles of earth and sun. When the Industrial Revolution caused rapid technological and cultural changes and drew Western societies indoors, human beings were plunged into artificial light and artificial climate control. Our natural rhythms became muddled by artificially controlled climate and light environments. Environmental behaviorialists suggest this might explain why up to one-third of us suffer from sleep or mood problems. Some environmental psychologists have even gone so far as to suggest that seasonal mood problems are so widespread that they have become a public health issue.

As urbanization affects more and more of our global populations, finding the proper environment for individuals becomes a greater challenge.

As reported by Gallagher, psychologist Peter Suedfeld believes that when it comes to stimulation levels in the modern world, within the bounds of reason, less is more. Experiments in reduced-stimulation environments such as float-tanks, suggest improvements in memory, creativity, and beneficial behavioral changes for those trying to overcome addictions. "Instead of allowing you to get distracted and tune them out, the chamber induces you to concentrate very hard on therapeutic stimuli. It also ensures that you have . . . nothing to do but introspect, to work something out for yourself" (p. 146). Yet too much understimulation can cause extreme reactions such as "cabin fever" or desert-related hysteria culminating in murder or suicide, or such problems as hypochondria, insomnia, hallucinations, and vague aches and pains.

Overstimulation—deadlines, crowded offices, traffic jams, noise pollution—delivers a neurochemical jolt. External stressors, emergencies, and chronic stress are often associated with changes in blood pressure, respiration rate, hormone levels, muscle tension, and digestion, and even with cardiovascular and gastrointestinal problems, lowered immunity, fatigue, and head and muscle aches, affecting not just our moods and performance but also health maintenance nationwide.

If overstimulation stresses adults, it has even more serious consequences for children. According to Gallagher: "The invisible pall noise casts over learning makes it a major problem in schools, where levels sometimes surpass federal safety standards. Near airports, busy roads, and train lines, students' achievement dips as the din rises. The price we all pay is energy spent on buffeting distractions instead of energy spent on better things such as productivity and learning."

As urbanization affects more and more of our global populations, finding the proper environment for individuals becomes a greater challenge. Social scientists agree that urbanization will be the most important influence on behavior in the twenty-first century. Questions about how we share our spaces, from the inches physically separating us to the territories of home, school, workplace, community, and ecosystem, will take on a new importance. Whereas most scientists believe that populations die out either because of predation or a lack of resources, John Calhoun, a psychologist from NIMH, concludes that the stress of crowding can cause extinction of all species, including human. According to Calhoun, "For forty thousand years, the population has periodically doubled, which has meant more ideas, information, and creativity for our evolving culture. But each time our numbers double, the number of social roles and the effort it takes to maintain satisfaction with life also increase" (p. 183).

As adaptive creatures, we can modify our environment and behavior to adapt to social stress, and we can be flexible in the ways we manage these stressors. Humans living in urbanized societies have long been estranged from their evolutionary hunting and gathering ancestors. Yet we still depend on wild nature, in different forms and fashions, to provide inner resources. As reported by Gallagher, Stephen Kaplan, professor of psychology at the University of Michigan, and his wife, Rachel, have found that nature restores us by easing mental fatigue. This condition, brought about by the hard work of concentrated attention and long hours of specialized activity, can be soothed by exposing ourselves to natural patterns

We must be open to alternative work and leisure schedules so that we can relieve many of the derogatory environmental stresses.

such as rippling water, swaying tree branches, drifting clouds. Fewer things competing for our attention and energy relaxes us; we begin to feel refreshed. Besides its aesthetic value, wild nature provides humans with a host of symbols and values on which all cultures rely.

Gallagher concludes that it is adaptive to value nature for both psychological and material reasons. "At any level, ignoring our relationship with our environment puts us in jeopardy. During a century of looking inward and living in the world between our ears, we have forgotten what our forebears knew and our scientists are rediscovering. The evidence of that lapse is all around us, not just in the dirty oceans and the chemical haze that obscures the Grand Canyon but in the rising incidence of stress-related disorders. It is time we look outside ourselves and start living in the real world again." [Gallagher, W. (1993). *The power of place: How our surroundings shape our thoughts, emotions and actions*. New York: Poseidon Press.]

Implications

The implications of these studies suggest that managers, doctors, architects, and educators must be sensitive to the ways we consider and define "environment." We must be creative in the development of places in which we work, heal and teach. By including research conducted by environmental behaviorialists in the subjects we teach and the approach we take, academics can help others become more aware of environmental influences on individuals as well as its influence on global populations. By considering individual responses to the "local or place" environment, we will more effectively design buildings, offices, hospitals and classrooms to enhance human well-being. Lastly, we must be open to alternative work and leisure schedules so that we can relieve many of the derogatory environmental stresses.

* * *

POLITICAL

Graham T.T. Molitor,
Public Policy Forecasting, Inc.

Research Budgets to Diversify Education Institution Revenues

Educational institutions strive to increase research funding to help offset curtailed government spending. Industry funded research, $1.2 billion in the U.S. during 1991, more than quadrupled over the past 10 years. [Editors (1993-1994, December 25-January 7). Towers of babble: Whatever happened to the university? *The Economist*, pp. 72-74.]

Implications

Strapped for revenues, political leaders will encourage educational institutions to diversify revenue sources. Research, especially in a technological and global competitive environment, is a natural pillar of support. Increased self-sufficiency is a hallmark of higher education underwriting.

Strapped for revenues, political leaders will encourage educational institutions to diversify revenue sources.

Reforming U.S. Higher Education

"Offer(ing) a smorgasbord of fanciful courses," and according lightweight courses equal weight with basics were among subjects assailed in a report issued by the Wingspread Group, a citizens' protest organization comprised of business and labor leaders, educators and former public officials. Recently released to U.S. academics, the report complained that schools put educator convenience ahead of concern for students. In support of returning to basics, a Department of Education review of 1992 college transcripts was cited to point out that surveyed graduates had, by percentage:

- 58.4% no foreign language study
- 39.6% no credits for either English or American literature
- 30.8% no math
- 26.2% no history training

[Henry, T. (1993, December 6). Challenging colleges to raise their standards, *USA Today*, p. 1D.]

Implications

Such critiques, based on mounting concern over rapidly rising costs in the face of dubious student achievement, will surge as the proportion of GDP devoted to education continues to rise. Compelling support for reform in the U.S. will be goaded by a growing awareness of international comparisons. Steps to improve student outcomes and enhance the value of education spending will grow apace.

Streamlining the Curriculum

As knowledge steadily evolves, new disciplines sprout up. More and more narrowly defined disciplines and special interest demands for inclusion in the curricula, figure prominently in vastly expanding course offerings and overburdening the curriculum. Escalating costs required to underwrite this expansive array of offerings force many institutions to pare back offerings, and to cut off entire programs or departments.

Sharing resources and facilities with nearby institutions is increasing. Utilizing off-site locations to pursue classes, research, and all forms of training is beneficial to all parties involved, including students who reap lower tuition. [Jordan, M. (1993, November 21). Universities look to streamlining, more sharing of resources, *The Washington Post*, p. A 10; Editors (1993-1994, December 25-January 7). Towers of babble: Whatever happened to the university? *The Economist*, pp. 72-74.]

Implications

Political leaders will be prompted to impose such reforms based on numerous examples set by American businesses as they return to core basics, shed collateral endeavors, redefine niche markets, pursue cost cutting efficiencies, and eliminate nice-to-have (but expendable) activities. Reduced funding for constructing on-site empires when nearby facilities will do is in the cards. Diversity-oriented programs may be denied as costs continue to rise.

Political leaders will be prompted to impose reforms based on numerous examples set by American businesses as they return to core basics, shed collateral endeavors, redefine niche markets, pursue cost cutting efficiencies, and eliminate nice-to-have (but expendable) activities.

Higher Education Job Status and Pay

As education garners a bigger percentage of GDP and spending for education becomes one of government's largest outlays, educational institutions will be subject to increasing scrutiny. Government institutions, including higher education, are stereotyped as rigid bureaucracies largely unresponsive to change. Viewed as an "inefficient nationalized industry," education provides many inviting targets.

- Should educators' pay and perks enjoy a privileged status, remain on a different plane beyond reproach?
- Is lifetime tenure an unjustified sinecure that perpetuates hangers-on and promotes sloth?
- Do collective bargaining agents skew relative pay schedules among all classes of government employees? Are educators likely be treated merely as other government employees?
- Are students unjustifiably shortchanged when star academics indulge in diversionary sabbaticals for excessively long periods, become overly preoccupied with endless research activities, fail to spend time in class with students (sometimes leaving these tasks to teaching assistants, including many instructors with English-speaking limitations), and otherwise act indifferent toward students?

[Editors (1993-1994, December 25-January 7). Towers of babble: Whatever happened to the university? *The Economist*, pp. 72-74.]

Implications

The political caldron will not allow education to become a satrap immune from accountability to students, parents and taxpayers who foot the bills. Teacher prerogatives and pay will become an increasing focal point of attention. Middle-aged students pursuing higher education to upgrade skills and enhance their job opportunities may lead the fight for reform. Youthful students pay scant attention to teacher salaries. Middle-aged students (more likely to be on the same age level as their teachers) will be far more critical of teacher abilities, insist that pay and perks be justified.

Performance Outcome Standards and Merit Pay

Education Department initiatives seek, for the first time, to impose performance standards on academia. Student aid program participation is to be tied to accreditation and state oversight agencies. Among the criteria are student achievement and faculty quality.

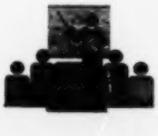
Implementation of such standards almost certainly will escalate interest in merit pay. Incentive pay of this sort often is assailed by educators because it affronts dignity, ignores self-policing, and otherwise infringes on perceived prerogatives. [Editors (1993-1994, December 25-January 7). Towers of babble: Whatever happened to the university?, *The Economist*, pp. 72-74; Fenyvisi, C. (December 20, 1994); Campus firestorm, *U.S. News & World Report*, p. 17.]

Implications

Performance outcomes and principles of merit, traditional marketplace incentives of business, ultimately will become touchstones in pursuing excellence in education.

* * *

Upcoming Professional Development Opportunity



The Fourth *Global Change* International Higher Education Strategic Management Seminar, *Managing Issues on the Horizon*, will be held at New Hall, Saint Andrews University, Scotland, July 29–August 1, 1994. This seminar is sponsored by *On the Horizon* in conjunction with H+E Associates and St. Andrews University. For more information contact James L. Morrison, CB#3500, Peabody Hall, UNC-Chapel Hill, Chapel Hill, NC 27599-3500. (919)962-2517. Internet James_Morrison@unc.edu.

COMMENTARY

A New World Order?

Theo Leverenz
Institutional
Research and
Planning
Georgetown College

The increase in the literature on transformation and reinvention in higher education, as well as seminars, workshops, and conferences devoted to the topic share one common thread—the struggle to figure out what transformation (or, as Dave Arnold of the University of Louisville would suggest, re-validation) really means. Perhaps the following will be of some help.

Recently, at a meeting of presidents of institutional members of the Council of Independent Colleges, Robert Heterick, president of EDUCOM, presented a conceptual framework for understanding the change in the relationship between technology and its users. Until quite recently, the technology universe was decidedly Ptolemaic: users were expected to adapt to whatever technology had to offer. Early technology experiences meant working with PCs and their awkward DOS commands, limited memory, slow speed, an essentially immutable collection of terminals, tape drives, and card readers.

According to Heterick, we are now well on our way through a radical transformation in the use of technology, and technology itself, that reflects a more Copernican view. Rather than a fixed high-tech point in space orbited by users, technology—with its databases, high-speed printing, networks, gophers, veronicas, multimedia, CD-ROMs and laser disks, e-mail, and the Internet—now orbits the user who has become the center of the universe and creates individualized constellations of applications as needed.

Conceptually speaking, higher education has operated with a Ptolemaic world view for the past 300 years or longer. Those served by higher education orbited a basic institutional center with its faculty, libraries, laboratories, residence halls, student unions and other components. However, a variety of powerful change agents, technology being only one, are quickly pushing colleges and universities toward Copernican relationships with their constituents.

What will it all mean? Heterick noted that technology is "de-mediating." For example, high-speed switching made the role of the telephone operator obsolete; we no longer have to tell "central" to "get me 949, please." More recently, online catalogs have changed, if not eliminated, some functions of traditional librarians. If basic course material can be made available directly to students interactively and on demand from virtually any place in the world, the "knowledge -> faculty -> student" relationship becomes de-mediated. But rather than eliminating faculty, technology liberates them to function in roles much closer to that of the ideal teacher: mentor, guide, counselor, partner.

Robert Heterick's conceptual analogy helps us understand the scope of technological change. Perhaps the same analogy can help institutional planners as we reflect on where the transformation of higher education will take us. Educational leaders should quickly grasp the academic phraseology—from Ptolemaic to Copernican—and be ready, willing, and able to apply it to higher institutions of learning.

A variety of powerful change agents—technology being only one—are quickly pushing colleges and universities toward Copernican relationships with their constituents.

THE SITUATION ROOM

Responding to Fast-Breaking Issues

Richard Heydinger
The Alliance for
Higher Education
Strategies
*The University of
Minnesota*

No matter how effective our environmental scanning process, situations will still arise in which institutional leaders will be responding in a crisis mode. It's usually only in hindsight that institutions set out to develop a crisis communications plan for dealing with fast breaking issues.

This Situation Room offers a generic model for responding to fast-breaking issues. These steps reflect the approach used at the University of Minnesota where, unfortunately, these procedures have been tested under fire a number of times. My former colleague, George Robb, Associate Vice President of External Relations and long time advisor to many Minnesota presidents, deserves most of the credit for this plan. When the issue is upon you and environmental scanning is but a pleasant memory of a slower time, and issues management is what you need but you are swimming for dear life, we suggest the following approach.

- Identify the problem as carefully and thoroughly as possible. Take a few extra moments to do this. It will pay handsome dividends later. It is at these initial moments, and perhaps only these initial moments, that you have an opportunity to frame the issue. Many crises are exacerbated by responding to the wrong issue and creating a second fire storm.
- Call together a crisis team that includes the full range of knowledge, perspective, and skills you will need. Take this team away from its day-to-day offices and put them into a situation-room. This will help them concentrate on the issue at hand.

Ensure that all information regarding the issue flows through this group.

- Collect the facts as quickly as possible. Organize these facts around the terms of the debate. Frequently this framework is not the typical institutional approach to an issue. To be maximally effective, your responses must speak to the questions on people's minds.
- Designate a public spokesperson for the issue. As much as possible, this individual should be the exclusive spokesperson for the issue. Encourage other administrators to refer inquiries to this person.
- Communicate with the concerned parties as quickly as possible, such as the media or other groups focusing on the issue. Describe to them the activities underway to collect information; and tell them when you intend to have an institutional response.
- Directly and promptly inform institutional stakeholders (e.g., legislators, donors, parents) about the issue and the institution's response.
- Release factual information as quickly as possible, but only after you have framed the issues of concern and you are assured of the information's accuracy.
- Keep institutional officers and trustees/regents informed on late-breaking information and institutional responses. Frequently these leaders will be asked by the media and other influential people for their response or opinion. You want to ensure that they have the most up-to-date information.
- Prepare a briefing sheet for internal use that lays out the key facts. This sheet can be in a question-answer format for ease of use in responding to anticipated inquiries.
- Develop action-oriented responses, as appropriate, to the issues raised. Always keep in mind those being served (e.g., the students) and other important institutional assets (e.g., the public trust). In crisis situations it is easy to focus exclusively on the concerns at hand from an internal, operational perspective while losing sight of the institution's overarching purposes. These purposes should guide responses.
- Don't duck tough questions or items. Respond to all reporters' inquiries. Remember that the media will fill its space with someone's response. It might as well be yours.

The approaches outlined above are not complex. They comprise the basic steps in handling any communications or public relations issue. In the heat of the moment, however, it is easy to overlook some of these steps unless your institution has taken the time to agree on a general approach for crisis management. Good luck!

Don't duck tough questions . . . The media will fill its space with someone's response. It might as well be yours.

INTERNET

Bernard Glassman
Pragmatix:Information Design

In Touch With the World

In this, the first of what may be a series of observations about the Internet and other electronic connections, we'll take a look at the 'Net as a medium for interaction above and beyond one-to-one e-mail. At the level of the USENET newsgroups and LISTSERV lists, that zone in cyberspace where conversation, correspondence and publishing intersect and overlap. Internet has enormous value, unimaginable potential.

An example of its indispensability: Within hours after the recent L.A. quake hit, newspapers and television were carrying news from and about the Internet, and for good reason. Unlike other parts of the infrastructure, this highway hadn't collapsed. Indeed, if you wanted to know how your cousin's neighborhood had fared, you had only to post an inquiry to *alt.current-events.la-quake*. Within minutes someone in the area, or someone listening to a local radio station, would check it out for you. The more academic-minded could Netsurf over to another news group and eavesdrop on seismologists as they compared notes on why they hadn't known about this fault. And seismologists were logging into the nonacademic groups to help dispel rumors and clarify the less-than-perfect technical coverage in the media.

Internet has enormous value, unimaginable potential.

Reporters from all over the world were watching the 'Net, writing about it, and drawing story ideas from what they read there. Journalism experienced a paradigm shift. Now it is not just the White House that is carrying its message around the big media and straight to the people, it is the 'Net and its new media analogs such as New York's Channel One, that are linking people directly—one to many, many to one, one-to-one. While HUD Secretary Alberto Peña is telling you on network news that FEMA has the emergency shelter problem just about under control, you can "talk" with victims to get their personal perspectives.

What does this have to do with environmental scanning? At its best, the shift from reading and viewing second and third-hand reporting to direct interaction with people at the forefront of the changes and events means less dependence on punditry. At its worst the big picture may become hopelessly confusing. Moreover, there is far less of the traditional sort of accountability on the 'Net than there is in what we view as the responsible mass media or peer reviewed literature. Yet no glittering generalization goes unchallenged for

To experience the sheer joy of getting around cyberspace, log onto your machine and type *gopher*.

long, and outright lies are exposed within hours, even minutes.

USENET newsgroups differ from LISTSERV lists in how the information is distributed. Your institution's computer subscribes to USENET groups, and you use special newsreader software that in most cases is on your host computer (the computer that follows the "@" in your Internet address.) Lists, on the other hand, are a kind of bulk e-mail that you can read right along with your electronic mail, reply to, and have your reply mailed to all other readers of the list. The latest compilation of these lists, alphabetized by topic, gives you complete information on how to subscribe.

What's the best way to get started reading USENET newsgroups and subscribing to LISTSERV lists? If you are brand new to the game, ask your information systems people for a printout of one of the many easy-to-read guides, such as *Zen and the Art of the Internet*. The bookstores are beginning to fill their shelves with introductions to the wonders of the 'Net, many of which include lists of the most popular groups and lists. Excellent examples are the three versions (one for Macintosh, one for DOS, and one for Windows) of *The Internet Tour Guides* by Michael Fraase (Ventana Books, 1994.) I'll review these in a subsequent issue, after I've had a chance to test the software that comes with them.

In our next issue I'll help you point your gopher to some databases that can be of enormous value to planners.

To experience the sheer joy of getting around cyberspace, log onto your machine and type *gopher*. One option will be *News*, preceded by a number. Type the number, hit the Enter key, and you're on your way. There will be times you'll feel a bit like Alice chasing the rabbit down his hole as the menus fly by and you spelunk your way into the remote regions of the virtual universe. Generally, holding down your control key and hitting *c* will offer you the option of quitting and bring you back to the old familiar prompt. In one sense, Gopher is just a way of making it easy for you to navigate the many computer networks and individual computers that make up the Internet. By doing nothing more than typing numbers and hitting your Enter key or using your up and down arrows to select menu choices you can travel virtually anywhere on the 'Net via Gopher, even retrieving files and programs and downloading them to your desktop computer.

Since we are focusing on USENET and LISTSERV lists, let's discuss how to get a list of LISTSERV lists from the *On the Horizon* archive. The list is stored on a UNC computer named Sunsite.unc.edu. There are potentially many ways to get into the Sunsite computer. Here are the most common: Launch your local Gopher by typing *gopher*. If you indeed have a local gopher, you'll be presented with a menu of choices, one of which will almost certainly be *other gophers*. Choosing this option will take you to a list of choices, which can vary, but which are generally self-explanatory. Usually, they are geographical, so you would follow a series of options like North America -> United States -> North Carolina -> Sunsite. A more direct but less interesting route is to begin at your local prompt and type *gopher sunsite.unc.edu*. (This still requires that there be gopher software on the machine in front of you or on the machine that you logged onto from your desktop.)

If there is no local gopher software, you may still be able to use telnet. Type *telnet sunsite.unc.edu*. You'll be offered the opportunity to log onto the Sunsite gopher just by typing gopher. With a few exceptions, the UNC computer (and any other computer you can telnet to) will treat you as though you were a terminal on the UNC campus, say at the library. That, of course, is what makes telnet so powerful.

Once you're in the Sunsite gopher, select *5. Worlds of Sunsite*, then *3. Browse All Sunsite Archives*, then *8. Academic*, then *13. Education* and you'll have arrived at the *On the Horizon* archives. *Lists* is just inside. And for those of you who do make the trip, I'll have a special treat waiting. How can you retrieve the list of lists for your own computer? Select it by typing the number and your Enter key, and type *shift+D*. You'll be given a menu of choices for transferring it to your computer, including Kermit, if you are using Kermit software or a program that supports Kermit transfers. But that is a topic for another day.

To leave the same way you came in, just tap your *u* key and you will be carried up and up through the strata, past lots of other entry-ways to places where the gopher stores information such as song lyrics, complete texts of poems (including all of Shakespeare), and the most recent State of the Union speech, along with the pending health care reform legislative proposal. Keep on Gopherin'. In our next issue I'll help you point your gopher to some databases that can be of enormous value to planners.

* * *

WinFax PRO 3.0 and Delrina Fax PRO for Macintosh, Delrina Technology

Bernard Glassman
Pragmatix:Information Design

Faxing is a way of life today.

The fax machine to which you are sending is just another peripheral printer.

Faxing is a way of life today. One estimate holds that one in four phone calls today is a fax transmission. It was by fax that Chinese students relayed the anguish of pre- and post-Tienanmen Square to the world, and via fax that they received messages of concern. There are many parts of the former Soviet Union with which the only reasonable communication is via fax. To see that the blessing is mixed, however, we need look no further than the junk faxes from the local deli, or the way that a few inconsiderate colleagues abuse the sense of urgency the fax still conveys.

To resolve the latter problem, just get a send/receive fax modem for your personal computer and you'll never have to uncurl a fax, or tie up your printer with unwanted messages, again.

Once you have that fax modem (now priced in the range of US$150 to $500, depending on features), what is the software to use with it? In one sense, the fax machine to which you are sending is just another peripheral printer, albeit one that usually must be called up over ordinary telephone lines. But as with all things of this nature, the implementation of a technology is only as valuable as the larger vision of its designers.

Delrina Technology, which has offices in California and in Ontario, is home to some of the most advanced thinking about the future of document exchange anywhere in the commercial marketplace. Whereas others are happy to knock out a piece of software that simply lets you send a page on your screen via your fax modem, Delrina distributes software that permits virtual forms to be created and distributed around your organization via a network, with each person doing his or her task to fill in the appropriate information and passing the form on to the next person. The Delrina utility lets you convert a faxed blank form into a stand-alone template with fields that can be filled in for return. But these are Windows only, at the moment, so their detailed review will await the Mac version. The point is, Delrina seems to have a thorough and mature familiarity with how workplaces work. Their fax software is solid evidence of that familiarity.

Let's take a look at how you might accomplish the two most common uses of any fax program—faxing a document you're working on at the moment, and firing off a quick, short memo without leaving your current application. In Windows: You've just finished entering last-minute changes to a planning memorandum in your word-processor of choice. It's time to fax it to a few reviewers for their comments. You select *File/Print*, and within the Print dialog you use *Setup* to select the WinFax driver. You click *OK* to confirm the driver and *OK* to confirm that you want to print, and you are offered a choice of individual names or predefined groups. (If the writing cycle has been going on for awhile, you've probably got a set of regular reviewers.) You select the combination of individuals and groups you want to receive the document and you select an optional cover page from a large library of cover pages provided by Delrina, or from those you have created yourself with the excellent drawing tools they provide, and you fill in the usual cover-page notes . . . and click *Send*. The document spools to disk, gets converted to faxable format, and you can go right on with your next task with the comforting sound of your fax modem dialing one after another of your recipients in the background. Later, you can switch to *FaxPro 3.0* and summon the log to see if any of your faxes could not be received.

On the Mac: When you are ready to fax you hold down the *option* key at the same time you choose *Print*. You're taken right to the list of potential recipients and the fax driver is automatically selected. After that, the procedure is essentially the same as in Windows.

An equally frequent need to fax is the one that occurs while you're in the midst of a project and you just want to get a quick note off to someone. In Windows, you would *Alt-Tab* to the Program Manager and load *WinFax*. Click *Send* to get to the familiar print dialog, choose or enter the recipient, and click *Select* button to choose the Fax Memo layout, or another of your creation or choosing. Click the *Send Cover . . .* option in the print dialog, then click *Fill In*. You are presented with the on-screen fax sheet just as it will look when it's received. Type your message, then click *Send*. On the Mac: Pull down the Apple menu, select *FaxWriter*, type your note, select the recipient, and click *Send*.

In either case, if you have a fax-formatted file, such as a fax you have received and want to forward to the next person, you need only click an *Attachment* button and choose the document to attach. One of the most frequent ways you will use this will be the very handy annotation function that lets you add your own notes to a received fax before either printing it or sending it along to the original sender or someone else. You can circle portions of the fax, write notes anywhere on the page, and add all the arrows and boxes and patterned areas you wish.

One of the real pleasures of WinFax 3.0 and its Macintosh cousin is their ability to perform opti-

Today, if you know the student's name, zip code, the newspaper associated with that zip code, and the paper's fax number, you write the letter once and send 100 versions, or 1000 versions, to as many recipients in a matter of minutes or hours.

cal character recognition (OCR) on faxes you receive. Someone faxes you a newspaper article, say, and you'd like to transcribe it to text for inclusion in a database or word-processing document. Make sure your senders put the print on the horizontal and not at an angle, and make equally sure that they use the fine or high resolution setting, and you are likely to be able to automatically transcribe 95% of the text without subsequent correction. Otherwise, you'll get gibberish. Still, OCR is one of the greatest additions to fax software, and Delrina has done it right. Unlike its only meaningful competition on the Mac, Delrina's product can be told to recognize an entire document and save it to disk as a textfile. (The competitor requires you to hand-select an area on one page at a time and issue a recognize command for which there is no keyboard equivalent.)

I like the fact that Delrina knows that of the six copies of a document I want to send, one may be going to Europe, so I'll want it to go at a different time. They let me set the transmission time of every copy of every fax separately. I can also use the mail merge function in Microsoft Word or AmiPro, produce completely personalized, individualized letters to each of any number of recipients, and invoke a macro that faxes each of the personalized letters to its recipient. This offers a degree of database-driven correspondence that is simply unprecedented. I used a database of localized information to fax individualized news releases to each of 100 newspaper editors. (Imagine you wanted to inform 100 different editors about the student from their town who had made the President's List.) Before the Delrina capability to fax-merge, that would have been a tedious nightmare, fraught with opportunities for error. Today, if you know the student's name, zip code, the newspaper associated with that zip code, and the paper's fax number, you write the letter once and send 100 versions, or 1000 versions, to as many recipients in a matter of minutes or hours. Once you begin thinking in these terms, the potential of a database of fax numbers will make the cost of entering and maintaining them an asymptote.

The Delrina approach to document management has tools so easy and convenient that you just may become an addict.

WinFax PRO 3.0 requires Windows, 2 megabytes of RAM, 8 megabytes of disk space.

Delrina Fax PRO for Macintosh requires 4 megabytes of RAM, 2 megabytes of disk space.

Suggested retail for both is US$129. (No educational discounts, but substantial savings through mail-order and competitive dealers.)

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On the Horizon

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The Information Revolution

James Ogilvy
Global Business
Network

Massive information resources will be available to almost anyone, almost anywhere, almost anytime.

The information revolution is changing the nature of the economy and the nature of our work in education. Consider the following:

- The development of the information highway will mean that massive information resources will be available to almost anyone, almost anywhere, almost anytime. Telephone companies are already laying thousands of miles of fiber-optic lines. Between the years 2000 and 2020 the United States will be fully fibered. Consequently, bricks and mortar—campuses—will become less important as distance learning (at home and on the job) becomes more prevalent. Just as the health-care industry is witnessing a shift from in-patient to out-patient care with fewer and shorter stays in hospitals, so education will shift toward an "out-student" model featuring self-paced, personalized instruction at sites of the student's own choosing.
- Because differentiation rather than standardization is at the heart of the information revolution, instructional software will be highly personalized. Rather than the same curriculum with the same pace for all, learning will occur in highly individualized ways. Intelligent diagnostics will identify the rate, level, and learning style of each student, and the pedagogical procedure of any given courseware will adjust accordingly.
- The increasing availability of hypertext will encourage less linear, more associative patterns of thought and inquiry. A history lesson in hypertext will allow a student to "touch" an unknown word with a finger on a screen or a light-pen or mouse, and zoom in on a deeper explanation of, say, the Dreyfus affair. And one question can lead to another. Who *was* Major Esterhazy? Minds will wander, and so much the better. They will traverse more territory, and with a higher level of interest, than minds being led on forced marches down the linear corridors of many current textbooks.
- The role of the teacher will change: from repository of expertise to guide to resources. Rather than playing the role of expert, at any level of learning, the teacher will be a mediator between the student and resources that far exceed what any individual, even the most skilled or brilliant scholar, could know. The best teachers and professors will not be those who work only at the cutting edge but those who are good at managing the interface between each student and existing knowledge, whether or not they are also pushing out the frontiers of knowledge.
- For the faculty, advancement and professional success will be less dependent on pedantry and more dependent on creative scholarship and teaching ability. Computers render human pedantry redundant; computers excel at storage and retrieval of facts and bibliographical references. Humans will need to create, deliver, and develop

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Faculty members will have to master the new tools of educational technology.

new and imaginative connections among the available explosion of data, and cultivate and enhance the human aspects of respect, curiosity, and attention that can inspire students to learn.

- Faculty members will have to master the new tools of educational technology. Like workers in other industries revolutionized by technological innovation, some will benefit from higher productivity, others will lose if they fail to keep up with their own learning. The job of teaching is not likely to get any easier, but the rewards will be even greater.
- Librarians will gain status and increased recognition for the importance of their role in mediating between those seeking information and the resources they wish to find. The very idea of what it is to be a librarian will move away from the pedantic repository of facts and towards the mediator or facilitator who knows how and where to find, how to interpret and skillfully apply information.
- Non-teaching staff will continue to suffer the cuts that have become commonplace following years of bureaucratic bloat and ratcheting growth. Whether rightly or wrongly accused, non-tenured staff are perceived as part of the problem rather than part of the solution when administrators fail to make ends meet in the budget process.
- The role of schools and colleges will shift from providing a rite of passage (from ignorance to knowledge) toward providing skills with tools that will be used again and again. Credentialing for specific occupations and professions will be less important than re-educating and updating. Learning will be less like losing one's virginity—a one-time event, never to be repeated—and more like eating: a necessary, recurrent, and often enjoyable activity.
- Among the most dramatic implications of this revolution is overcoming the sense of remoteness experienced at some of the more rural schools and community colleges. If distance learning becomes a reality, then distance loses its significance, whether the distance is literally geographical or more cultural and economic. Wherever found, a terminal offers its user a global metropolis of learning.
- If distance learning takes place at home, on the job, or while traveling, residential campuses will become less centrally important to the system. Information technology will decentralize learning. One can imagine those remaining on campus as "the studio audience." The school building or college campus will cease to be the only place where courses are given and will become more like the lot where courses are produced.

Will the poor get poorer because they cannot afford the technology to access educational networks?

Challenges

There are a number of challenges we face, given the information revolution.

1. Where is the human touch? Will social skills be neglected by individuals locked for hours to their private terminals? Will the interaction between teacher and student and among students within the classroom or seminar be sacrificed to the one-way communication of the lecture if students are separated from teachers by the technology of distance learning? If high-tech is unmediated by human interaction, we may neglect the productivity improvements available through information and communications technology. Or, seizing upon what John Naisbitt has labeled the trend toward "hi-tech/hi-touch," we may find ways to compensate for the apparent impersonality of high-technology.
2. What will happen to those who resist the new technology? Secretaries and stenographers who boycotted word processors and computers eventually lost their jobs. Will teachers and professors resist the increases in productivity available through information technology? If a few star performers create the courseware used by millions, what will happen to the many who shine less brightly under the studio lights? A system that relies on a few studio stars is a system, like show-biz, with a few big winners and a lot of losers eating their hearts out in low-paying jobs between casting calls. Teachers unions and independent faculty members will resist this system.
3. Where will the money come from to finance the up-links for high-tech educational networks? Today it costs approximately $50,000 for each remote site to be linked together in an interactive educational network. Will the costs of educational studio technology break the bank? Money for up-links may not be a big problem for three reasons: first, despite the cost, if the premise is one of improvements in productivity through vastly enhanced distribution capability, then whatever the costs, the benefits rise even faster than the costs so the bargain is worth making. Second, the costs of almost all information technologies are rapidly declining and will continue to decline. Third, at least part of the costs may be defrayed by the private sector.
4. Will there be structural inequities in the availability of down-links? Will the poor get poorer because they cannot afford the technology to access educational networks? Will educational technology enhance the opportunities of minorities because it is color-blind, or, even better, more capable of adapting to different learning styles than today's teachers? *Or,* will a greater

Continued on page 4

FROM THE EDITOR

James L. Morrison
On the Horizon
The University of North Carolina at Chapel Hill

In the introduction to a monograph titled *All One System* (1985), Harold Hodgkinson noted that U.S. educators perceived education as a set of discrete institutions working in isolation, with virtually no connection and little awareness of educational activity provided by the total. In fact, the only people who saw these institutions *as a system* were students.

Hodgkinson argued that "changes in the composition of the group moving through the educational system will change the system faster than anything else except nuclear war" (p. 1). Moreover, if educators can begin to see the educational system as a single entity through which people move, "they may behave as if all of education were related." He likened the educational continuum to a food chain in ecology: any alteration in the food chain will affect organisms at all points in the chain. Hodgkinson cited the way the Baby Boom of 70 million people born in the U.S. between 1946 and 1964 affected schools. As the Boomers moved through the system, educational organizations in each sector—pre-schools, elementary and secondary schools, and postsecondary schools—had to expand enormously, and then contract with equal severity as Boomer cohorts aged out of schools. Other trends (e.g., ethnic diversity, the increasing number of single-parent households, immigration, aging, graduation rates) are interrelated and will affect not just specific sectors, but also the total education system. Hodgkinson argued, therefore, that it is necessary to view education as one system: changes in one component cause changes in others, indeed in all components.

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It is necessary to view education as one system: changes in one component cause changes in others, indeed in all components.

Since Hodgkinson wrote his monograph other factors have come into play. Such events as the end of the cold war and the globalization of every phase of our lives—communication, economic competition, political interaction, technological advances—demand immediate focus on the need for schools and colleges to adequately prepare people for the workforce. Growing numbers of school-business partnerships and college-corporate partnerships are a response to these driving forces as are the growing number of college and university partnerships with local school systems.

Consequently, we are expanding *On the Horizon's* focus to include K-12 schools and school systems. I have asked our writers to view education as one system and, therefore, to include the implications of signals of change in the macroenvironment for elementary and secondary schools as well as for colleges and universities, beginning with this issue. Although there will continue to be potential changes that will affect mainly one sector or another, most changes will probably have some effect on the continuum of sectors in education. We will describe these effects as well as we can.

To spread the word, we need your help. Please share one of your copies of *On the Horizon* with your local school superintendent or other contacts within that system, telling them of our change in editorial policy and recommending that they call or write me for more information or for a subscription. We will also mail brochures to those who work in the K-12 sector, but we think that your personal recommendation will be more effective than a mailed brochure. Many thanks!

[Hodgkinson, H. 1985. *All one system.* Washington, D.C.: Institute for Educational Leadership, Inc.]

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Upcoming Professional Development Opportunity

The Fourth *Global Change* International Higher Education Strategic Management Seminar, *Managing Issues on the Horizon*, will be held at New Hall, Saint Andrews University, Scotland, July 29–August 1, 1994. This seminar is sponsored by *On the Horizon* in conjunction with H+E Associates and St. Andrews University.

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The Information Revolution

continued from page 2

dependence on technology further disadvantage some students because (a) they may be unable to afford the down-links, or (b), the living conditions of some students may diminish their ability to accommodate to educational technology? Surely it is easier to imagine higher penetration rates for educational terminals for students with their own homes and bedrooms than for students without homes, much less private bedrooms. There is a real danger of the split between haves and have-nots being widened by a technological wedge, fostering a possible separation into knows and know-nots.

Technology is one of the most potent forces for social change. Ever since Gutenberg, and surely since the invention of television, the attention span and the information content available to us have been fundamentally altered by changes in technology. These changes are accelerating, and they are bound to alter the structure of education. Only by looking ahead, by being alert to both the dangers and opportunities inherent in information technology, can we act to improve knowledge acquisition for our students from K-12 and for those in higher education.

There is a real danger of the split between haves and have-nots being widened by a technological wedge, fostering a possible separation into knows and know-nots.

[Editor's note: This view of what may be "on the horizon" is modified from Ogilvy, J. (1993). Three scenarios for higher education: The California case. *The NEA Higher Education Journal*, 9 (2), 25-68.]

SOCIAL

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Proposed Restructuring That Will Really Improve Schools

Throughout the last several years, many states and localities have attempted to reform their public schools; however, the changes that have been made have not led to significant improvement. Part of the problem with recent reform is that it has treated the symptoms rather than the underlying issues.

Although reformers have used the term "restructuring," significant changes have not been made. Restructuring is "changing the system of rules, roles, and relationships that govern the way time, people, space, knowledge, and technology are used." In other words, the fundamental paradigm in which schools are viewed would need to be changed.

Several suggestions about altering the basic rules of schools have been made by Phillip Schlechty, the president of the Center for Leadership in School Reform. These suggestions imply that the entire system needs restructuring, because new demands have been placed on the system and schools are not able to meet those demands. For instance, the public may demand that the children learn algebra; however, half of the children still need a strong basic math background.

In order to start meeting the challenge of improving schools, the Center for Leadership in School Reform has made the following recommendations:

- School leaders and teachers need to view students as customers.
- Educators need to design work-school activities that promote analytical skills.
- Cross-aged units that meet the specific capabilities and educational levels of children may be an answer to meeting the different needs of children, rather than the traditional grade division.
- In order to initiate positive change, leaders will have to understand the process, get control of the process, and where possible, improve the process. In addition, they need to understand current demands and define future goals in order to create and implement initiatives that will meet those demands and goals.

[Brandt, R.,(1993, October). On restructuring roles and relationships: A conversation with Phil Schlechty, *Educational Leadership, 51* (2), pp. 8-11.]

Implications

Schlechty's comments raise a number of questions:

1. Are schools and colleges providing students with an education that prepares them for challenges and decision making outside academia?
2. Should we initiate more school-business and more university-corporate collaborations in order to provide an applied experience for more students? What about developing more cooperative education programs?
3. What are the costs and benefits associated with these reforms?

Part of the problem with recent reform [of public schools] is that it has treated the symptoms rather than the underlying issues.

* * *

TECHNOLOGICAL

Wally Albers
Albers Systems, Inc.

Jack of All Trades; Master of None

Horizontal corporations bring a new set of requirements for management ranks. The traditional components of marketing, accounting, and finance for the MBA will no longer be sufficient. Staff will be required to have a feel for computers and other technologies that help companies deliver their products or services. The traditional training of engineers will have to be supplemented by the acquisition of some of the "softer" skills related to finance and marketing. This growth in demand for managerial-caliber people focuses on more cross-disciplinary skills and training than ever before. Business schools faced with declining enrollments can search for new enrollments from engineering and computer science. Because of waning research in the post-cold-war period, engineering schools are pushing more and more students into business courses. The result is an interesting confluence of events that should lead to a win-win situation; corporations win by getting appropriately trained people, and B-schools win by expanding their student base. [Baker, S. and McWilliams, G. (1994, January 31). Now comes the corporate triathlete, *Business Week*, pp. 71-72.]

Implications

Institutions of higher learning are going to feel increasing pressure to provide a cross-disciplinary studies environment. Specialization will still be important (master of one) but breadth will continue to grow in importance (jack of all trades). Tactical and strategic planning at the curriculum and resource allocation levels should certainly include this reality of the new business world.

The traditional training of engineers will have to be supplemented by the acquisition of some of the "softer" skills related to finance and marketing.

Intelligent Materials

Researchers in the material sciences have discovered how to fabricate light materials that can adjust their physical properties to fit changes in their environments. The materials get their smartness from computerized sensors and actuators imbedded in them that simulate the nerves in human bodies. They sense the challenges in the environment and send this information to a computer system which, acting like a human brain, controls how the material reacts to the changes in its external condition. The possibilities for application of these intelligent materials seem endless. One such application, hinted at by some members of the research team at the University of Missouri-Rolla, could result in the ability of skyscrapers and other large structures to control, rather than test, the dangerous vibrations of an earthquake. The University's Intelligent Systems Center list of projects also includes the development of several alloys that can remember their shape (i.e., if they are bent out of shape they will react by returning to their original configuration). [Demmler, A. (1994, February). Smart structures, *Automotive Engineering*, 102 (2), p. 20.]

Implications

Technological advances involving the combination of the computer sciences, material sciences, electronic engineering, metallurgy, and chemistry have tremendous ramifications for education at all levels. Research teams must assume an interdisciplinary nature. Yet most colleges and universities are configured around the traditional independent disciplines. Educational institutions at all levels must explicitly require cross-disciplinary teamwork in curriculum reform and faculty design.

Educational institutions at all levels must explicitly require cross-disciplinary teamwork in curriculum reform and faculty design.

The Changing Character of U.S. R&D Expenditures

The projection of 1994 U.S. R&D expenditures carries a good news - bad news aspect. The good news is that the expenditures will increase over the 1993 level by some 2.3%, keeping ahead, just barely, of inflation. The bad news is that a much greater percentage of these expenditures will be allocated to applied R&D rather than basic research, traditionally the stronghold of academic research facilities. This strong push towards applied R&D is related to several factors, among them the Clinton Administration's emphasis on technology transfer and short-term projects with industrial applicability, and U.S. industry's prolonged downsizing efforts. On the whole, though, colleges and universities will make out OK; they will perform about 16% of the total U.S. R&D while being a source of only about 4% of the total funding. [Duga, T. (1994, January). *Laboratory 1994 annual forecast of U.S. R&D expenditures*. Columbus, OH: Battelle.]

Implications

Colleges and universities are going to have to be increasingly innovative and creative in their pursuit of basic research funding over the next several years. An awareness of this need must be developed and information relative to the R&D fund allocation process should be explicitly included in any planning exercise.

* * *

ECONOMIC

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Preparing workers for the 21st century presents a monumental challenge for educators.

Working in the 21st Century: A New Appraisal

We haven't the time to take our time.
Eugene Ionesco: *Exit the King* (1963)

In the February issue of *On the Horizon* we reviewed the changes in the global economy that have affected future organizations as workplaces. The workplace is the locus or opportunity for exchanging an individual's free time for money. The two parties in this exchange process are the organization and the individual.

Let us now ask the following series of questions:

1. What kind of workplaces will these changes create?
2. What kind of workforce will these workplaces require?
3. What kind of education must be delivered by the schools and colleges to secure a good match between workplace requirements and workforce skills and capabilities?

These three questions are the three sides of The Magic Triangle: Workplace 2000, Workforce 2000, and Education 2000.

Workplace 2000

Workplace organizations of the future will share the following characteristics:

1. The average company will become smaller, employing fewer people [Fierman, J. (1993, May 17). The contingency workforce. *Fortune*, p. 39).]
2. The traditional hierarchical organization will give way to a variety of organizational forms, the network of specialists foremost among them [Quinn, J. B. (1992). *The intelligent enterprise.* New York: Free Press.]
3. The workplace will replace manufacturing operatives with technicians such as the computer repairmen or radiation therapists as the worker elite [Fierman, J. (1993, May 17). The contigency workforce. *Fortune*, p. 39).]
4. The vertical division of labor will be replaced by a horizontal division [Byrne, J. A. (1993,

The 21st century workplace will demand people with initiative, creativity, flexibility, willingness to participate, information-technology-literacy and global-mindedness.

Teach students to practice *backward chaining* or *future pull*, setting goals for the future and figuring out ways to get there.

December 20). The horizontal organization. *Business Week, 3341*, pp. 76-81.]

5. The paradigm of doing business will shift from making a product to providing a service [Quinn, J. B. (1992). *The intelligent enterprise.* New York: Free Press.]
6. Work itself will be redefined: constant learning, more high order thinking, less nine-to-five [Fierman, J. (1993, May 17). The contingency workforce. *Fortune*, p. 39.]

Twenty-first century organizations will be:

1. Diverse brain-power intensive [Coates, J. F., et al. (1990). *Seven critical forces reshaping work and the work force in North America.* San Francisco: Jossey-Bass Publishers.]
2. Healthier, saner, more creative, and yet more chaotic—like nature itself
3. Information-intensive, unlike its energy-intensive technology predecessor [Hines, Andy. (1994, January-February). Jobs and infotech. *The Futurist*, pp. 9-13; Hallett, Jeffrey J. (1987). Worklife visions: Redefining work for the information economy. Alexandria, VA: American Society for Personnel Administrators.]
4. A battleground for ambitious people with huge career expectations competing for a diminishing number of positions [Sherman, S. (1993, January 25). A brave new Darwinian workplace, *Fortune*, pp. 33-35.]
5. A gathering of "enablers"—creative, flexible, initiative-takers, risk-takers, team-players and problem-solvers [Boyett, J. H. and Conn, H. P. (1991). *Workplace 2000.* New York: Dutton, p. 8.]

Workforce 2000

Global world population planners have focused on reducing population growth rates in the developing countries. In general these efforts have been successful. By 1990, birth rates had dropped to about 2% for the developing world, with the exception of Africa, which was still close to 3%, as compared to birth rates of .5% for the developed countries. However, considered alone, these declining birth rates (percentages) distort the picture. Because of the immense momentum already built into the system, there is a great numerical increase. Although each woman is having fewer children, many more women are giving birth. By the year 2000, over 90 million people—more than Mexico's current population—will be added annually to the population of developing countries. Thereafter, the number of people added each year will decrease slowly, with world population probably stabilizing at a projected 11.2 billion in 2100. In the developed world, the percentage share of the world population has been cut by some 10% and will be further reduced to one-half of its 1950 level. [*World Resources, 1992-93: A report by the World Resources Institute*, 1709 New York Avenue, NW. Washington, DC., 2006, p. 76.]

The Global Workforce for the year 2000 will reflect these changes in the world population. By the year 2000, the world labor force will be 2.7 billion. Of this total, the developed world will have some 401 million (14.6%) of the global work force and will grow at .5%; the developing countries will reach 2.1 billion (77.8%) at a growth rate of 2.1% and the former Soviet Union will supply some 155 million (5.7%) at an annual growth rate of .5%. [Johnston, W. B. (1991, March-April). Global work force 2000: The new world labor market, *Harvard Business Review, 69(2)*, pp. 116-127.]

The workforce of the year 2000 will have the following characteristics:

1. An aging workforce in the developed world (13.3% will be over 65 years while in the developing world only 5.1% will fall in the same category).
2. An increasing number of the world's high school and college graduates will come from developing countries. Although the United States supplies the largest percentage of scientists in the world, much of the world's scientific brain power comes from developing countries. Four out of the next six greatest sources of college graduates are in developing countries: Brazil, China, the Philippines, and South Korea. China and Brazil rank third and fifth in the number of science graduates, followed by Japan. For engineering graduates, Brazil, China, Mexico, Korea and the Philippines all are ahead of France and the United Kingdom (Johnston, p. 122).

Education 2000

Preparing workers for the 21st century presents a monumental challenge for educators. Neither the public educational system nor private enterprise has prepared workers for the new workplace. Public primary and secondary schools, technical schools, and universities alike, according to numerous commissions, have done a very poor job.

Despite the substantial sums of money spent in training and development, most of the workforce does not perform to its potential. Private training and development and on-the-job training have been geared to learning the technology, the requirements of the machines and tools, and the manager-directed approach. T&D must focus on teaching a new model to workers. [Neill, J. (1993, December 30). Facing the future of choice, *Financial Times*, p. 6).]

The 21st century workplace will demand people with initiative, creativity, flexibility, willingness to participate, information-technology-literacy and global-mindedness. Formal education, secure jobs, well identified career paths, tell-me-what-you-want-me-to-do attitudes, and my-country-is-the-world viewpoints are passé.

What can educators do?

First and foremost, introduce flexibility into the requirements for diplomas and degrees. Second, reverse the temporal sequence of exposing students to the storehouse of knowledge. Instead, of teaching the history of a discipline, extrapolating from past to future, teach students to practice "backward chaining" or "future pull," setting goals for the future and figuring out ways to get there. [Land, G. and Jarman, B. (1992). *Breakpoint and beyond: Mastering the future today.* New York: Harper-Collins.]

Third, reverse the spacial-locale sequence in thinking. Start with the global and then go through a sort of "cone of complexity resolution" to get to other countries, including one's own country.

Fourth, reverse the exposure of delivery sequence in teaching. Start with real life applications and then sort out the basic laws underlying the related phenomena. [Gleick, J. (1992). *Genius.* New York: Random House.]

Are we up to these challenges? I, for one, say "Yes, we are." In fact, not only are we *almost* ready to meet the challenges, some of us are already there!

* * *

ENVIRONMENTAL

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What educational tactics can ensure widespread environmental literacy?

In 1989, two colleagues in the Biology Department at the University of Iowa, Henry Howe (now at the University of Illinois-Chicago Circle) and Stephen Hubbell (now of Princeton University) formed the Committee for the National Institute for the Environment (CNIE). The committee turned into action their increasing dissatisfaction with the quality, breadth, and accessibility of environmental studies in the United States, laying the groundwork for an NIE bill before Congress (H.R. 2918). The bill outlines a proposed new federal science agency, focused exclusively on the environment, and with the mission of improving the scientific basis for making decisions on environmental issues.

The CNIE will focus on science, not management and regulation; CNIE will complement existing programs (such as EPA) and involve government, academe, business, and others in determining and carrying out federal needs. Research will be organized into three directorates: Environmental Resources (inventories, monitoring, characterization), Environmental Systems (mechanisms, processes, and effects), and Environmental Sustainability (strategies, technologies, solutions). Research programs will draw upon social, biological, or physical sciences; engineering; or humanities to address a given issue. The Center for Environmental Assessment will determine the significance of a particular issue and will evaluate the implications of research results and identify options for policymakers and managers. The National Library for the Environment will electronically provide public access to the nation's environmental informational resources, including databases, assessments, and publications. The Library will maintain linkages with organizations that store information about the environment (such as NOAA's important data on the atmosphere and oceans) and provide support to strengthen their assets and incorporate them into an integrated system. The Directorate of Education and Training will support research training through fellowships and training grants and will support the development of curricula and programs.

New Initiatives

The Committee, newly designated the *Coalition* for the NIE, represents a broad constituency, including business, government agencies, and environmental organizations as well as academics. CNIE's new president, Ambassador Richard Benedick, led the successful effort to negotiate international adoption of the Montreal Protocol on ozone depletion, chronicled in his book, *Ozone Diplomacy*. In addition to the Washington and Chicago offices, CNIE has a new office in California.

CNIE has in place a national network of over 6500 interested citizens including scientists and scholars, business people, and educators. Twenty-two universities and over 100 non-governmental environmental organizations and professional societies (including the American Anthropological Association) have endorsed the CNIE concept. Sixty-five members of Congress serve as sponsors for H.R. 2978, the legislation that seeks to bring the NIE into existence; over 100 influential business and academic leaders have agreed to serve on CNIE's Advisory Committee.

The Coalition has already begun to act as a focus for addressing broad issues that cut across many organizations and outreach initiatives. Dan Durrett's July 1993 report addressing issues of environmental justice is available from the Washington office. Also new in the Washington office, Kathy Papp is working to identify the 10 most important environmental issues broadly affecting business and industry, concentrating on the con-

Will social, natural, and physical scientists collaborate to solve environmental problems facing us globally in the 21st century?

cerns of small business; Tania Kandra coordinates multi-media communications for CNIE.

A university-based petition drive for signatures in support for the formation of an NIE is also underway, giving students the opportunity to affect the national science agenda. CNIE's commitment to integrated scholarship across disciplinary lines can serve as a campus-based reminder that the nation's environmental problems—and their solutions—are an amalgam of scientific, policy, health, legal, cultural, and philosophical understandings; future funding will favor interdisciplinary efforts, and not projects in single disciplines or those within particular schools.

Local chapters across the country can offer common ground, drawing on the energy and respect CNIE has already generated and demonstrating how individuals and local groups can work together on environmental issues of national concern.

For more information contact the CNIE at 730 11th Street NW, Washington DC 20001-4521, telephone 202-628-4303, Fax 202-628-4311.

Implications

Facing those with responsibilities in education are the following questions: What educational tactics can ensure widespread environmental literacy? Where will jobs in the environmental sector be and how can we best prepare our students? How can administrators, teachers, students and citizens access reliable data? How can issues of environmental justice be addressed in academe? How can these issues be settled? Will social, natural, and physical scientists collaborate to solve environmental problems facing us globally in the 21st century?

* * *

POLITICAL

Graham T. T. Molitor
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Whereas recidivism rates nationally range from 60-70%, recidivism among inmates who received two years of school while serving time, amounted to only 10%.

Education Dominates General Fund Appropriations for FY 1994

National Conference of State Legislatures' statistics reveal that education funding for fiscal year (FY) 1994 dominates state government budgets. General fund appropriations among the states for FY 1994 averaged a total of 41.9% of all appropriations. Higher education accounted for 12% of all appropriations, and education appropriations for primary and secondary schools (grades K-12) accounted for 29.9%, more than twice the amount earmarked for higher education.

Implications

State legislatures are accountable to voters. When spending for any single program or when spending in a category dominates all other obligations, attention inevitably will be drawn to that category. Accordingly, count on education obligations falling under close and careful scrutiny to ensure that these funds are well spent. Taxpayers, increasingly discomforted by escalating costs of government, will demand it.

Should Prison Inmates Receive Education Benefits?

Keeping prisoners behind bars costs taxpayers $30,000 per prisoner, per year, more than it costs to send a person to college for a year. Last year prison inmates received Pell grants (for education) of over $200 million, a 200-fold increase from 1980. During the first three quarters of the current Pell award year, 27,771 grants were made to convicts (less than 1% of all Pell awards). The average grant amounted to $1,500 per inmate. Prisoners sentenced to death or life imprisonment without possibility of parole are barred from participation in the program.

Recidivism results from many factors. Following release from prison, many offenders find it difficult to get reestablished and reintegrated into society. Most employers are loathe to knowingly hire persons with prison records, and rejection by other "decent" citizens ultimately disposes "down and outers" to return to a life of crime. Senator Pell asserts that education opens new opportunities, usually enhances self esteem, and seemingly turns soured citizens into producing pathways. Whereas recidivism rates nationally range from 60-70%, recidivism among inmates who received two years of school while serving time, amounted to only 10%.

[Pell, C. and Hutchinson, K. B. (1994, March 17). Should inmates get student aid? No: Deserving pupils lose out on Pell grants. Yes: Pell grants dramatically reduce recidivism. *USA Today*, p. 13A.]

Implications

Law abiding citizens, unable to scrape up funds to meet college education costs, find it hard to understand how convicts should reap benefits they cannot afford for themselves. As crime rates soar, most law abiding citizens are bound to look askance at spending any money—let alone any more money—on prisoners. According to entitlement rules, because convicts have no income, they can jump to the head of the line in terms of Pell grant eligibility. Popular sentiments run the other way; criminal convicts are thought to owe a debt to society, not vice-versa. With the number of incarcerated persons growing, rehabilitation programs that work deserve a meaningful try.

Tuition Prepayment Plans

Tuition costs reportedly increase at rates of 7-15% in the U.S. annually.

Virginia became the 13th state to establish laws permitting parents/providers to establish tax deferred accounts to pay the future costs of educating their children. Parents, under that plan, would be allowed to pay lump sums or monthly payments into an account at tuition rates effective at the time of payment. Vouchers would entitle bearers to full tuition at the time of attendance. Investment earnings and general treasury revenues for any shortfall would make up any costs differences. Penalties could be levied for students electing to pursue education outside the state.

Tuition costs reportedly increase at rates of 7-15% in the U.S. annually. So long as tuition inflation outpaces the general rate of inflation and exceeds returns earned by most investments, parents are likely to be open for such plans. Michigan commenced a prepaid tuition plan in 1988, and suspended it in 1990 when trust fund earnings fell below tuition rate increases. Court appeals seek to avoid IRS taxation of fund earnings.

Tuition prepayment is only one part of college costs. Plans in states such as Florida, also allow prepayment of dormitory and meal costs on the same terms. Current contributions paid at prevailing rates for amenities will be paid in full by the fund when the student actually embarks upon college training. [Wilgoren, D. (1994, March 4). Virginia to let parents prepay tuition: Plan would lock in rates long before college years, *The Washington Post*, pp. A1, A17.]

Implications

When we attempt to level the playing field, we may get a backlash from taxpayers in wealthier districts who see an erosion of their school system.

No end is in sight for rising tuition costs. Escalating education costs—tuition, room and board—regularly outpace general rates of inflation and create parent/provider apprehension. Higher education outlays are among the most costly ones incurred during a person's entire lifetime. Higher education, essential to the "good life" during the Information Era, will spawn financial arrangements to assure the ability to pay without disrupting financial affairs. Schemes for spreading out higher education costs will create an entire new genre of prefinancing programs. Disparities among the state plans already have prompted serious discussion of the need for national trust funds. These national funds may be superior to state funds because students could choose any college in the country without penalty.

Shift Away from Property to Sales Taxes to Finance Public Education.

Civil rights champions contend that school financing policies that provide more money for wealthy areas than to poorer areas are unfair to poor children. Property taxes traditionally provide most financial support for public schools. Revenues derived from more valuable properties situated in more affluent areas inevitably will generate more wherewithal. Theorists propose correcting this problem by diverting property tax revenues from richer areas to poorer ones. Judicial cases in some 24 states challenge this result. Property owners vehemently oppose such actions.

In Illinois, where only one out of four homeowners has school children, property tax increases constitute a major issue in gubernatorial elections. Kalkaska, Michigan, property owners, many of them with no school age children, rejected property tax increases to bail out bankrupt schools, thereby forcing a shutdown of the education system 10 weeks early in 1993. March 15, 1994, Michigan voters opted to increase sales taxes to pay for education. A 50% increase in sales taxes, boosting tax rates from 4% to 6%, has been devised to create a general fund with which to level the playing field. Sales taxes per person will be raised $200-250, while property taxes will decline 33%. Pay-as-you-go taxes, in today's political climate, appear to be more popular than lump sum tax-time bites that arouse ire. Other tax hikes include a "sin tax" that increases the cigarette tax from 25 cents per pack to 75 cents. [Jordan, M. (1994, March 17). Michigan school taxes herald national change: Some see sales levy as more equitable, *The Washington Post*, pp. A1, A 14.]

Implications

Income redistribution principles are strongly afoot here. Schools financed by property taxes impose a larger burden on wealthier taxpayers, but at the same time, provide the children of wealthier taxpayers more resources. Sales taxes impose some tax burden on everyone, but are regressive in impact. Schools financed by the state via sales and "sin" taxes will receive resources according to an allocation formula. As a general rule, poorer schools will get more money than they did; wealthier schools will get less money than they did from government revenues. When we attempt to level the playing field, we may get a backlash from taxpayers in wealthier districts who see an erosion of their school system. This could increase the flight to private schools. It could also increase the pressure to institute a voucher system.

METHODS AND TECHNIQUES

James B. Rieley
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Hoshin Planning—A Process that Works

We need a planning process that will deliver a detailed map of not only where to go but also how to get there.

All educational organizations face increasing demands for accountability, increasing calls for effectiveness from their customers, and increasing levels of competition from other institutions and the private sector. The only decrease in the list is in revenue sources, an important factor to take into account. With data access doubling every five years, and the world population doubling in approximately 50 years, we face an urgent situation in planning for the future.

Planning in education has been misunderstood. In the past, we have planned superficially. A typical planning scenario might be to have the "planners" get together on a several day retreat and, with the usual environmental scan information, put together a plan for the timeframe mandated by a governing board. The plan is attractively packaged, and then put on everyone's shelves.

We need a planning process that will deliver a detailed map of not only where to go, but also how to get there. This planning process, called *Hoshin*, roughly translates to "shiny metal." The reference is to the point of a compass, the part of the compass that shows the way. There are three major elements in this process, vertical alignment, horizontal coordination, and unit optimization.

Vertical alignment refers to "everybody's seeing the same picture." In many institutions, a lack of common focus has contributed to wasted resources and misconceptions regarding institutional direction. Horizontal coordination refers to the ability of the institution to effectively function across division and/or departmental lines. Unit optimization refers to each component element of each division and department working effectively toward the achievement of the college mission.

The first step in the planning process is the development of a vision for the future of the institution. This vision gives all areas of the college a central focus for developing a plan, a map, of how the institution can go from where it is, to where it wants to go. Important among the several steps in articulating the map are: the development of indicators of progress toward the vision, development of driving elements of the indicators, determination of current baseline position, validation of institutional mission, identifying current trends affecting the institution, and determining and prioritizing customer needs; developing institutional strengths, weaknesses, and objectives, setting first year goals and objectives, and developing targets, responsibilities, measures of accomplishment, timelines, audit processes, and vehicles for first year goals.

Unlike traditional planning, this process is not done solely by the "planners" in an institution. It is done by a cross-sectional group of the institutional population and should include members of the community, business and industry, and students, not on a two or three day retreat, but over time. This ensures the ability of the planning group to obtain needed data and have their direction validated as the process proceeds.

Characteristic of the Hoshin planning process is the use of quality-based management and planning tools. Although seemingly foreign to planners at first glance, these tools remove the ambiguity of the decision-making process, making the rationale for decisions highly visible to all, and ensuring that the decisions can be tracked back to the vision of the institution. The use of quality management and planning tools provides the capability to realize the shared vision.

There are only a few institutions in this country currently using the Hoshin process. The ones who are, however, are becoming more and more effective in their ability to address the needs of their students and other customers, both internal and external. For more information on Hoshin planning, please contact The Center for Continuing Quality Improvement, 700 West State Street, Milwaukee, WI 53233, phone 414 297-7806.

Mark P. Champion
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Environmental Scanning: A Five-Phase Model

I skate to where the puck will be… Wayne Gretsky

Educational institutions look for change "where the puck will be," namely where community changes can be expected. In June 1991, Grand Rapids Community College (GRCC) and Michigan State University (MSU) started a joint environmental scan in order to better anticipate those changing expectations.

The project's purpose was the development, field testing, and dissemination of a replicative Model for Environmental Scanning to Systematically Assess Future Occupational Education and Training Needs of a Michigan Community College Service Area. The 18-month pilot project was geared to produce a replicable model to detect work-related needs that might emerge in the next several years within GRCC's service area. The scan was to be systematic and continuous in order to track factors that tend to influence all organizations: sociocultural, technological, economic, environmental, political/legal.

The scan was to be systematic and continuous in order to track factors that tend to influence all organizations.

Following a literature review of environmental scanning, the steering committee established a five-phase model. The phases parallel the work of Hage and Aiken (1970). They include: awareness, assessment, initiation, implementation, and integration. A scanning team consisting of GRCC staff, MSU staff, and secondary educators assessed external factors related to the School of Occupational Education's mission and then validated the factors through a two-round Delphi survey with the help of community, business, and education leaders including MSU faculty.

The process succeeded because of several factors:

- **Steering Committee**: A diverse team including representatives of the university, occupational education, institutional research, strategic planning, faculty, and including a technology consultant, a project coordinator, a futurist, and a research librarian, directed scanning activities and shared expertise.
- **Scanning Team**: This group was responsible for abstracting information and analyzing the results. The team included occupational-education and liberal arts faculty, job placement and secondary education personnel, and the Steering Committee.
- **Monitoring and Troubleshooting**: Scanning worked best when it was made to "fit" the daily routine of the scanner. A project coordinator made adjustments to meet each scanner's needs.
- **Communication**: The Steering Committee kept participants and others informed. E-Mail messages, memos, reports, and a newsletter (*Scanotes*) updated participants.
- **Technology**: Computers were used to communicate, organize, and analyze information, saving time and providing immediacy.
- **Local or Regional Sources**: The team emphasized local information by using print media and other sources from the college's service area.

Results of the Scan

After the environmental scanning process identified trends and issues, recommendations were made to the Dean of Occupational Education around those most critical to occupational education, as rated by participants. Major issues included: *Responding to the Changing Work Force*, which speaks to issues of institutional reorganization; *The Quality Paradigm*, which discusses accountability issues and the spread of Total Quality Management to the classroom; *The Global Market*, which calls for integrating internationalization into the college curriculum; *The Work Force's Changing Face*, which identifies the increase of minority and female participation in the workplace; and *Anticipating Our Future*, which recommends the institutional integration of scanning.

A matrix, integrating the recommendations with existing committees, was developed to institutionalize the findings. In addition to the recommendations, other positive outcomes of the scanning process include cross-unit staff dialogue, a regional data base, and formalized linkages with key community members. The project has increased the entire community's awareness of the educational needs of the future.

The project has increased the entire community's awareness of the educational needs of the future.

Scanning: Present and Future

The Office of Institutional Research continues to direct scanning activities. The office monitors issues relevant to the recommendations and initiates focused scanning related to occupational needs studies, program evaluations, and broader institutional issues. Scanners are enlisted on a more informal basis and send their information directly to Institutional Research. Past scanning team members and other interested stakeholders receive updates through an electronic version of the newsletter, *Scanotes*, which is sent via the college's network.

Implications

When a project of the magnitude of the GRCC program is completed, there should be tangible evidence of its worth. GRCC's Office of Institutional Research is keeping track of changes related to the project's recommendations. For example, following up on one of the recommendations to merge liberal arts and occupational education, the GRCC's president announced the end of the two-school system and established three new schools, each of which contain divisions of both liberal arts and occupational education.

Additionally, there should be provision for replication of the model. A facilitator's guide was published to assist other educational agencies in replicating the environmental scanning process. It centers around the five-phase model, providing a step-by-step approach to implementing a customized environmental scanning process. The guide also provides examples of materials used during the scan. These materials are available on disk, allowing users to modify them for their own use (call 1-800-292-1606 for information as to how to obtain the guide and an environmental scanning literature review). [Hage, J. and Aiken, M. (1970). *Social change in complex organizations.* New York: Random House.]

IN THE 'NET

Bernard Glassman
Pragmatix:
Information design

Coming Soon: Your Own Knowledge Robot

Not only is *On the Horizon* about those trends and events that its editors believe represent the future of education, it is also about how to spot those trends for yourself, as soon as they are relevant to your institution, even before they may become of general interest. This column will help you use the Internet for just that purpose.

Imagine that you could set a representative loose on the 'Net.

We begin with a very short review of a very good book, *The Internet Tour Guide* by Michael Fraase ($27.95, Ventana Press, 1994). There are really three versions of Fraase's book—one for the Mac, one for DOS, and one for Windows. They are essentially identical except for the diskful of software you get with the book—wonderful software that I will discuss in greater detail on another occasion.

Though many books on the 'Net are more comprehensive than Fraase's, and many are more technical, I believe none offers a better mixture of the adventure and the nuts-and-bolts practical aspects of getting around the 'Net via a variety of vehicles (Gopher, World-wide Web, Eudora). Fraase's book has a lot of the feel of a practical walking guide to a foreign city, written by someone who loves that city and knows it well, who wants you to be able to share the excitement. Of course unlike the London of the walking guides, the most thrilling sights (or sites?) on the 'Net have changed substantially by the time a book about them can make it onto paper. Fraase knows this, and offers you access to his own online bulletin board, where he and you and your fellow visitors can rest your feet and trade tips and opinions about what you've seen. And a good idea it is, too, because Fraase got his book out just ahead of the broad availability of Mosaic, generally agreed to be the most important contribution to the 'Net in years, so it's not covered. But you'll find plenty of discussion of Mosaic on his bulletin board. End of book review.

Imagine that you could set a representative loose on the 'Net. Twenty-four hours a day, it travels among the publicly available areas of the thousands of computers that constitute the Internet. When it finds what looks like a hit, it sends you e-mail. When it finds a particularly hot area, it leaves a remote sensor at that site to notify it, and then you, of any late-breaking information events, such as the posting of a new bibliography on a subject of interest to you. While it's out there, it meets other representatives with similar interests, and it offers you the opportunity to interact with the others' human owners, or to merely permit it to exchange information with the other virtual representatives regarding promising new sites where related information might be found.

Here is a microcosmic example: Minnesota and California are already well on their way to putting their proposed legislation and computerized records into publicly available archives. Some of that legislation and information will be about education. Much of it will have an impact on education, whether it is explicitly related to schools or not. When all the states are posting their legislation and other documents to sites available over the 'Net, who will keep track of the legislation that embodies breakthrough approaches to education finance, or trends in the establishment of policy on the management of capital assets? And what about the local dialogue about that legislation, in which economists and policy-makers, administrators and legislators, discuss the implications for their state and regional institutions? Or the budgets of the institutions, or their assets' profiles? You may be certain that journalists, taxpayer watchdogs, and special interest and advocacy groups will be mining the 'Net constantly. Who among you will have the time to do the same?

Increasingly, meeting highlights are being posted, and in many cases full transcripts and supporting analyses can be ordered from the author. Your personal electronic representative out there will be watching for just such items.

Enter General Magic and Telescript, the environmental scanner's friend, the brain-child of Macintosh mavens Bill Atkinson and Andy Herzfeld. General Magic, their company, has set out to bring you the personal information device to end them all. Whether or not the machine will be a hit is something that time must tell, but the software concept that they developed to go with it could revolutionize information-gathering.

Telescript, if it becomes available, will offer the ability to treat the differences among individual computers, operating systems and applications on the 'Net as if those differences didn't exist. Using a generic language, you will send scripts out and about, operating each system they visit, getting the information you want and a great deal more.

Already the people who defend our systems against improper intrusion and tampering are expressing concerns about the possible harm such programs could do. General Magic says they have built in a great deal of accountability and protection. Everyone agrees that the rewards of the 'Net are bound to bring such risks. It may behoove you to ask your information systems people what they know about General Magic and Telescript.

General Magic... has set out to bring you the personal information device to end them all.

THE SITUATION ROOM

Richard B. Heydinger
The Alliance for Higher Education Strategies
The University of Minnesota

Assessing the Case for Paradigm Shifts

Certainly one of the landmark books of the twentieth century is Thomas Kuhn's 1962 work, *The Structure of Scientific Revolutions*. Today's popularization of the concept of paradigms can be traced to this seminal work.

Following the publication of Kuhn's theory, a number of social scientists corroborated his work with field research that defined paradigms and traced their changing nature. The resulting applied theory provides an evaluative framework for examining a current paradigm and assessing its volatility. Such a framework can be particularly useful to practicing issues managers as they assess a current paradigm or struggle to communicate imprecise paradigmatic developments.

For example, the paradigm shift underway in higher education becomes much more evident when examined in light of various characteristics emerging from this literature.

First, a shift in the current paradigm is underway when there are *increased arguments about seeing and doing*. Current debates about political correctness or the radical feminist interpretation of the social sciences are demonstrations of this facet. Similarly, Bloom's *Closing of the American Mind* or Anderson's *Impostor in the Temple* are debates about the "doing" of higher education.

Second, a shift is underway when there are *extensive reports and data on failures*. A spate of recent feature stories in the popular press ranging from the *Chicago Tribune* to TV tabloids such as *Inside Edition* demonstrate this characteristic. More credible broadsides are the American Imperative from the Wingspread Group and SHEEO's reports on faculty productivity.

Third, another characteristic is *dissatisfaction and confusion amongst practitioners*. I would posit that the current debate about the appropriate balance between teaching and research are evidence of this characteristic. In addition, many articles and speeches call attention to the deteriorating faculty morale.

Fourth, there is *performance deterioration which alters the political order*. Certainly state legislators must feel that our effectiveness is under question, for increasingly they are examining faculty teaching loads and in some states passing workload guidelines.

Fifth, another characteristic that can contribute to a conclusion about a changing paradigm is an *increased search for alternative approaches*. Today's higher education literature is replete with new approaches such as EDUCOM's initiative in courseware development, AAHE's K-16 network, weekend colleges, etc.

Sixth, the current paradigm is unstable or fragile when *little events lead to crises*. I would cite the indirect cost recovery scandal and the willingness of a school to pay the tuition at another school for a student alleged to have sexually harassed a classmate. Plenty of other examples are available.

Seventh, a paradigm shift probably is occur-

The higher education paradigm is shifting and shifting dramatically.

ring when there is *increased dynamism within the system*. Mind Extension University, the Keller Graduate School of Business, and the Graduate School of America are all proprietary examples of an increasingly more dynamic and volatile higher education marketplace. Rumors abound about the objectives of the large cable and communications firms and their business intents with regard to higher education.

No single factor or example cited above signals a changing or shifting paradigm. However, when this framework is examined in its entirety, it presents an irrefutable case that the higher education paradigm is shifting and shifting dramatically. It would be premature to predict the characteristics of the next paradigm; however, there is little doubt that a fundamental shift is underway.

Hopefully such a framework will be useful as you evaluate the paradigms in which you work and attempt to gauge their robustness. Specific applications of such a framework can be a useful communications tool in convincing skeptical colleagues that a particular issue needs addressing. Good luck!

[Bloom, A. *Closing of the American Mind* (1987). New York: Simon & Schuster. Anderson, Martin. *Impostor in the Temple* (1992). New York: Simon & Schuster.]

TOOLS

Bernard Glassman
Pragmatix:
Information design

ClarisImpact for Mac and Windows

It was 8 o'clock on a Friday morning, and I was preparing for a meeting scheduled for four that afternoon. Through a series of good news/bad news breaks, I had inherited someone else's three-page set of flow diagrams for a highly complex five-year public information and education campaign. I had also inherited the job of replanning the whole project and meeting with the principal investigator and several others to explain my proposed approach. The flow diagrams had arrived by fax the night before, and I was just beginning to decide that it would be folly to try to recreate and modify them in time for the meeting when the doorbell rang. It was UPS with yet another box of software to review.

ClarisImpact comes with an impressive array of drawing tools.

It was ClarisImpact, a new presentation-creator that builds flow diagrams, organization charts, graphs and tables. Presentation-creator! Just what I needed. Was fortune smiling or was this going to be yet another instance where trying to use software for the first time in order to meet a deadline would be a near disaster? Well, it *was* Claris, after all. How hard could it be to use for a person who'd be using a Macintosh since 1985?

The organization chart tools are just what the virtual corporation or university ordered.

Well, it wasn't hard at all. Installation was slow, because it's a huge program with all of the clip-art, dictionaries, translators for other programs' files, tutorials, help files, samples...maybe 15 MB in all. But the installer is smart enough to give you a chance to load only what you'll need, and to explain the purpose of each installation option.

By 10 a.m., I was hard at work. There's a menu of easy-to-understand tool icons, and I chose the one that represented flow diagrams. Immediately I was offered a choice of styles of diagram, ranging from the traditional systems analysis style to some very ornamental ones. I went for one that would be readily comprehenible to a wide range of people—no special symbols for decision points or computational steps, for example, though at any time I could have grabbed one of those symbols. I decided to first recreate the diagram I'd inherited, since anything I did would have to be explained in terms of modifications to the original plan. I drew a box (click, drag, release) and started typing. Just like that. No placing the cursor in the box. It adopted an attractive font in a good size, perfectly centered—something I could not have expected from a drawing program. But here's what's best. On each side of the box was a little pointer. I clicked on the one that represented the direction I wanted to go, and the next box appeared, complete with a connecting arrow. Move a box to the right, the arrow lengthened to stay with it. Move the box up or down, the arrow tilted, or broke into a 90° angle, depending on the line style selected. In short, I was free to create, modify and arrange the project steps, with almost no need to worry about the little drawing details. I could begin to do visual planning even as I was reproducing my predecessor's chart. Even when I needed to move three boxes at once (a situation where a population had been randomized into three groups). I grouped them and dragged them into place. They all came along in tandem, with the arrows re-aligning themselves. By 12:30 I could break for lunch with drafts of the complete set of flow diagrams to review and mark up.

ClarisImpact comes with an impressive array of drawing tools, enough that it can easily seduce you into over-decorating your presentation. It brilliantly handles graduated fills, the fading of one color into another, the effect that looks so good on slides, better than most of the dedicated drawing programs you were likely to own until recently. It handles text management for your slides with no real restrictions, but its word-processing features are completely unintrusive. You'll need to decide for yourself whether being able to check automatically the spelling on a set of transparencies-to-be is worth the enhanced risk of ending up with "to" instead of "too" through mistaken complacency.

The organization chart tools are just what the virtual corporation or university ordered. You can flatten a hierarchy in seconds, consolidate a couple of departments with a click and a drag, and even drop a digitized photo in to every box to turn it into a useful orientation tool.

Concerning the graph-making capabilities of ClarisImpact, the program offers such variety and such ease of implementation that you will actually want to make these graphs yourself. You can import data into a data table and use it to generate a graph, then modify the style of graph to your heart's content. It's easy, it's fun, and it's heuristic.

However, you can't import live data from your spreadsheet and graph it, then change the data in the spreadsheet and automatically update the graph. There is no spreadsheet, not even the most rudimentary, in Impact itself. You might think you could have a live connection with Excel. But when the data change you must copy and paste them into the Impact data table. It'll cost you two or three minutes per graph, and some of your attention span. But for the graphing that Impact can produce, it's worth it.

No educational discounts, but lots of competitive upgrades.

ClarisImpact's suggested retail price is $399. Competitive upgrades bring it down to $149 from Claris, less by mail. If you are a registered MacDraw Pro user, it's $99 or $49, depending on how recently you registered.

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Education in the 21st Century

James Ogilvy
Global Business Network

In the last issue of *On the Horizon*, I wrote a scenario, *The Information Revolution*, built around the promise of information technology. In this issue I present two additional scenarios—*Education Inc.* and *The New Educational Order.*

The information revolution scenario was based on a technology fix for public education. *Education Inc.* relies on a private sector fix, which may also include a technology fix. *The New Educational Order* includes aspects of both *The Information Revolution* and *Education Inc.*, technology and corporate support.

But *The New Educational Order* employs these means toward ends that are fundamentally different from the current objectives of most schools and colleges. *The New Educational Order* is based on a paradigm shift from the current concept of higher education as taking place in an ivory tower far removed from day to day concerns, to something closer to a service institution more directly engaged with the problems of the day, including those of public education.

Since *The Information Revolution* was described in the last issue of *On the Horizon*, let me now move on to *Education Inc.*

The logic of the marketplace, like the logic of the information revolution, can reach into all aspects of education.

Education, Inc.—*The School as a Business*

The logic of this scenario is centered around the relationship between education and the economy: the rewards and incentives at play, and the institutional structures that can help or inhibit the enrichment of education, and enrichment by education. The logic of the marketplace, like the logic of the information revolution, can reach into all aspects of education: supply-side, demand-side, and the structure and organization of institutions.

Among the many supply-side models is one that would make a university a business of its own. Changes in the 1986 tax law permit universities to benefit from their labs' commercialized federally funded research projects. Royalties may solve many higher educational institutions' financial problems.

In the business of education, mergers and acquisitions proliferate. Educators conduct market research to get closer to their customers. New technologies are rigorously market tested and aggressively marketed. The packaging—the pedagogy—improves.

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Should the marketplace influence the shape of the curriculum?

School districts might follow the example of some community colleges that collaborate with high-tech employers, thus assuring desirable underwriting. But should the marketplace influence the shape of the curriculum? Is this perhaps selling out to business interests?

Corporate-cooperating does more than deal with the supply-side; it also acknowledges, responds to, and gains power over the demand-side of what we have called Education, Inc. Imagine a 1996 state referendum that dictates payment of funding credits directly to elementary, secondary, and higher education students who can *spend* the credits in appropriate schools of their choice. In this future, schools must market their wares to appeal to discriminating shoppers.

In addition to supply and demand, a third factor to consider is restructuring. If educational institutions cannot provide businesses with employees with marketable skills, then these businesses will do their own training. In higher education, curriculum designers may feel the pressure to put training, with a slant toward the D in R&D, ahead of a less goal-oriented liberal education. Success measures will include the financial accomplishments of alumni, replacing scholarship awards, college admissions, athletics, and even Nobel laureate awards.

If educational institutions cannot provide businesses with employees with marketable skills, then these businesses will do their own training.

The New Educational Order—A Paradigm Shift

This scenario is driven by a paradigm shift that is reflected in other parts of society, from concerns about the environment and worries about our decaying infrastructure to changes in the fundamental assumptions underlying many of the disciplines that make up a curriculum. One aspect of the new paradigm is a heightened appreciation for the systematic interconnectedness of things and an equal appreciation for long-term consequences.

In *The New Educational Order* both the context for high technology and the dynamics of the marketplace are pressed into the service of an increased concern for social justice and the quality of life. There is a redrawing of the boundaries between the personal and the political, the private and the public.

Schools and universities will be socially engaged service institutions rather than distant ivory towers. Broadly distributed public needs, however, require imaginative new systems of delivery. Universal needs (for example, providing as many of the basic necessities as can be put through a single "pipe" into every home) may require a universal utility delivery system of basic services to every citizen in the nation, delivering systematic interconnection—and education—by means of millions of miles of glass fiber.

The New Educational Order draws heavily on the idea of interconnectedness. History teachers, for example, will teach the relationships not just of the past and the present, but rather of the past, the present, and the future. Debate over an evolving social contract will address tradeoffs between public necessities and private liberties, rights and responsibilities, universal needs and particular privileges. Integrity and character are issues that *New Educational Order* exponents must delve into.

In *The New Educational Order*, learning has replaced shopping as a leisure activity, and the university has replaced the mall as a favorite hangout. The gratifications of knowing are enhanced by a paradigm shift that transforms knowledge from a passive, spectral representation of objects at a distance (like watching old television and recording the world on videotape) to a much more active—interactive—involvement with the world and with other people. From participatory knowledge it is then a short step to participatory democracy: an active involvement in the civic life of the community. The community and the public schools are the laboratory.

Conclusion

The list of future challenges is a long one and worthy of further and deeper exploration than space allows. In a future issue I will discuss concerns faced by students, faculty, and staff, as well as by administrators, politicians, and other citizens. It is important to remember that scenarios by themselves do not solve problems. They do, however, highlight challenges and opportunities; the scenarios described above are intended to assist planners as they look to the future.

[Editor's note: These scenarios are condensed from Ogilvy, J. (1993). Three scenarios for higher education: The California case. *Thought & Action: The NEA Higher Education Journal*, 9 (2), 25-68.]

Commentary on the scenarios: In *Education, Inc.*, universities may organize their faculties as consulting firms, much like teaching hospitals where medical professors practice medicine and incorporate this experience in their teaching and writing while increasing their salaries as well as the income of the university. In *The New Educational Order*, colleges and universities will increasingly follow the lead of public schools in their battle to regain public confidence by sponsoring internships for students to work in public service; students will plan for their internships with as much care as they now use in planning for graduate school. These internships will prepare students better for the world of work.

-Gregg Edwards

FROM THE EDITOR

James L. Morrison
Educational
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Several colleagues have written congratulatory, supportive letters assessing *On the Horizon*. These have been most welcome and reassuring. There have also, however, been a few critical responses that are thoughtful, provocative, and challenging. Three of the questions are paraphrased below:

1. If *On the Horizon*'s orientation is toward describing future changes and implications of these potential changes in the macro-environment, rather than toward reporting on institutions' current activities to meet ongoing changes, won't your newsletter be perceived as theoretical and irrelevant?
2. Aren't many of the trends and developments the newsletter identifies as on-the-horizon really coming down the street and knocking at the front door? The time for scanning and planning is past. This is the time to act strategically, to redistribute resources, to adopt more efficient instructional delivery systems and to restructure curriculum.
3. Why have you enlarged *On the Horizon*'s coverage from higher education to the entire education field? K-12 institutions already have publications that focus on school reform (e.g., *Education Week* and *Phi Delta Kappan*). *On the Horizon* should remain focused on fundamental issues facing higher education and should report on the

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The Institute for Academic and Professional Leadership serves educational leaders by providing professional development workshops and seminars. For more information about the Institute, its facilities, and its services, contact William S. Pate, Program Coordinator, The Friday Center, CB#1020, UNC-CH, Chapel Hill, NC 27599. (919) 962-3276. Internet: wspate@gibbs.oit.unc.edu.

***On the Horizon*'s unique niche is to focus on the macro-environment and derive the implications of signals of change in this environment.**

success or failure of innovations specific institutions have adopted in response.

The first two questions can best be responded to by briefly overviewing and clarifying *On the Horizon*'s mission.

First, a definition of three levels of environment (Fahey & Narayanan, 1986): The *task environment* refers to a set of customers (e.g., students and potential students, parents of students and of potential students, political leaders, employers and potential employers of students, professional associations of faculty and administrators). The task environment is more or less specific to a particular educational organization. Although a community college, a public school, a proprietary school, and a research university are in the same community, each has a different task environmens.

A second level, the *industry environment*, comprises all enterprises associated with higher education or K-12 education in the society. At this level, factors such as public confidence in education, or student aid bills being considered by Congress directly affect all educational organizations, although the effect varies depending upon the type of organization (i.e., research or comprehensive, two- or four-year, public or private, or K-12).

The third and broadest level is the *macro-environment*, where changes in the social, technological, economic, environmental and political sectors interact to produce system-wide changes that, in turn, affect schools and colleges directly or indirectly. For example, the economic costs of technological transformation (e.g., equipment upgrading and worker retooling) reduce society's discretionary resources, leading to reduced public sector revenues, just at a time when these changes also require greater expenditures on education. At the same time, a recession may stimulate an increase in enrollments, particularly in K-12 schools or in colleges with low tuitions.

***On the Horizon*'s mission is to provide early warning to leaders in schools and colleges, and to the corporate and political sectors concerned about educational improvement.**

This system-wide level, the macro-environment, includes the social, technological, economic, environmental and political (*On the Horizon*'s STEEP) sectors.

The *social* sector focuses on demographics, life-styles and values. Our interest here lies in understanding shifts in population characteristics and the emergence of new social values or life-styles.

The *technological* sector is concerned with advances in basic research (e.g., new processes, products, or materials) that may generate commercially viable new technologies.

The *economic* sector focuses on the general set of economic factors and conditions in the regional, national and global society (e.g., GNP growth, disparity in income levels, concentrations of wealth).

The *environmental* sector includes issues such as energy efficiency, reusing and recycling, protecting biological bases, adequately feeding world population, stabilizing population, environmental protection.

The *political* sector focuses on local, regional, national, and global political and regulatory processes (e.g., interest groups, regulatory agencies, legislation).

These five sectors are interactive at the macro-environmental level. Changes in one sector at any level (local, national, global) may lead to changes in another. A war in the Middle East may cause the price of oil to increase, stimulating a recession, which in turn results in budget cuts. Technological developments in California to convert wind power to low cost energy could reduce the costs of fossil fuel energy, with concomitant economic ramifications. Similarly, the three levels of environment interact. These interweaving interdependent patterns underscore the necessity of scanning them all if we want to pick up early signals of change.

Publications of various professional organizations focus on the task and industry environments, as do such publications as *Education Week, The Chronicle of Higher Education,* and *Phi Delta Kappan,* to name a few. Occasionally, these publications carry items from the larger macro-environment. *On the Horizon*'s unique niche is to focus on the macro-environment and derive the implications of signals of change in this environment for the task and industry environments as well as for educational organizations themselves.

For a full answer to the third question/complaint, why has *On the Horizon* expanded coverage to focus on education as one system, kindergarten through graduate school, please see my column in the April/May issue. Briefly, the rationale cited was that each component of education is interconnected; changes in one segment affect other segments. By drawing out the implications of emerging trends and potential developments in the larger society for elementary, secondary, and postsecondary education, including current efforts at educational reform, *On the Horizon* can better inform leaders in these sectors (and in the corporate and political sectors) who may then be able to act more effectively to improve education as a whole.

To summarize, *On the Horizon*'s mission is to provide early warning to leaders in schools and colleges, and to the corporate and political sectors concerned about educational improvement. We will continue to emphasize changes in the macro-environment and their implications for educational organizations, including what educational leaders may do in response to these implications.

And we will take advantage of technology to assist us in this mission. The announcement on page 14 describes *Horizon List* on the Internet, and how you may respond to articles, propose articles, or join in a general discussion about emerging trends and issues that may affect educational organizations. Active use of this list will make *On the Horizon* a truly interactive newsletter and one that can keep us informed between issues. To facilitate this conversation, we have put past issues in an archive, easily accessible when you sign on to *Horizon List*. I look forward to seeing you on the 'Net.

[Fahey, L., & Narayanan, V. K. (1986). *Macroenvironmental analysis for strategic management*. New York: West Publishing Company.]

SOCIAL

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Administrators and teachers at all educational levels must assume more responsibility in creating and transmitting a sense of the need for ethics on a personal and an organizational level.

Should collaborative approaches include more interaction between K-12 and higher education?

An Integrity-Based Approach to Ethics Management

Numerous managers think that ethics are a question of personal scruples, and are *not* a formal element of the discipline of management. According to Sharp-Pine (1994), "Ethics have everything to do with management. Rarely do the character flaws of a lone actor fully explain corporate misconduct." Managers who fail to design systems that promote ethical conduct are just as negligent as those who intentionally benefit from corporate wrong doing.

Leaders who ignore ethics create a higher risk of personal, government, or corporate liability.

A comprehensive approach is necessary in order to nurture an environment that advocates exemplary behavior. An option that combines leadership responsibility for ethical behavior with a concern for the law is known as "an integrity-based approach to ethics management." Through the implementation of integrity strategies, the organization's ethical framework shifts from "bothersome" to "governing ethics" of organization in day-to-day operations. Integrity strategies:

- can differ in scope and design
- aim to define organization guidelines
- conceptualize aspirations, values, and conduct.

Self governance coupled with a set of guiding principles form the basis for organizational integrity. This strategy holds the organization to a higher standard and creates a shared sense of accountability among employees.

[Sharp-Pine, Lynn.(1994, March-April). Managing for organizational integrity. *Harvard Business Review*, pp. 106-117.]

Implications

Administrators and teachers at all educational levels must assume more responsibility in creating and transmitting a sense of the need for ethics on a personal and an organizational level. Are these leaders willing to invest the time, commitment, and resources necessary to create a climate for cooperative, ethical behavior, to prepare students for a more ethically-aware workplace environment?

Attacking Old Problems in New Ways

Local and state leaders are trying new approaches to policy issues. Lawmakers are reassessing their strategies and looking for innovative solutions to priority problems. Leaders have been moving toward a more comprehensive assessment of the problems and more collaborative solutions. For instance, when lawmakers examine child welfare, they get assessments from police officers, jurists, educators, business people, and human services providers.

State leaders are using comprehensive approaches to solve problems such as health care reform, education, and crime. Concerned about the impact of federal health initiatives, states fear they will have to spend more, adversely affecting state initiatives already implemented. In another priority issue, education, state leaders must examine funding, school choice, charter schools, discipline, and school safety, and determine innovative solutions that balance budgets and provide effective services.

Several states have approached the crime issue with task forces that consist of legislators, law enforcement officers, human services, and school officials. The rising list of issues continues, but it is being met with a reassessment of approaches to deal with the complex problems.

[Griffin, D. (February, 1994). Packed agendas. *State Legislatures*, pp., 10-11.]

Implications

In order to serve the public sector's escalating problems, the following questions must be addressed:

1. Can educational institutions discover simple yet sophisticated ways to resolve complex problems?
2. What are the negative and positive aspects of approaching complex problems from numerous directions and through different sectors?
3. Should collaborative approaches include more interaction between K-12 and higher education?

* * *

TECHNOLOGICAL

Wally Albers
Albers Systems, Inc.

The Information Highway's Conscience

As the technologically marvelous information highway evolves at an ever increasing rate, some are beginning to question what societal impact might come from the unintended and potentially unwelcome consequences of these emerging technologies. Privacy, data security, information haves and have-nots, power base shifts: these are just a few of the societal issues becoming increasingly evident in the information superhighway literature. Although these societal implications are easy to identify, there remains a dearth of approaches for analyzing and measuring the magnitude and sensing the form of such societal impacts. New analytical and observational tools for application to societal issues are needed in order to plan and implement the information superhighway in a socially responsive manner. [Baig, E. C. (May, 1994). Ready, set—go on-line. *Business Week*, pp. 124-133.]

New analytical and observational tools for application to societal issues are needed in order to plan and implement the information superhighway in a socially responsive manner.

Implications

At present, a strenuous debate is taking place about how best to put hardware in schools and colleges. The rough spots are social issues, not technological ones. Educational institutions at all levels, K-12 as well as colleges and universities, have a huge stake in the way the information superhighway takes shape; leaders in these institutions must plan for their involvement both as suppliers of methodologies to analyze societal impacts and as users of the technology for educational purposes.

Cyberspace in the Classroom

With partial funding from the Natural Science Foundation (NSF), the Global Schoolhouse Project (GSP) began as an experiment to explore, test, and demonstrate the utility of the Internet as a teaching and learning tool in the K-12 environment. This project offers teachers and students the tools and the training to use the Internet in everyday activities. Participating schools are located in 12 states across the U.S. from New York to California; Australia is expected to join the project soon. Project goals for the current year are: demonstrate how people and information resources on the Internet can be used as classroom tools for research and interactive collaborative learning; teach students how to become active learners and "information managers"; develop an online system of training and support for teachers; demonstrate the most current technologies in both connectivity and network tools for the classroom; and encourage business, government, education and community partnerships in the integration of technology into the classroom. Among the tangible benefits realized so far are: first, a model for learning is emerging in which students are active participants and work side by side with teachers; next, the GSP activities help students to view change as a challenge rather than an obstacle; and finally, the students become enthusiastic knowledge seekers, learning information management skills that will enable them to continue lifelong learning as we move into the information age.

[Calcari, S. (May 1994). The global schoolhouse project: Teachers and students learning together in cyberspace. Internet.]

Implications

Cyberspace technology is barely started as a classroom tool and already the potential for learning via cyberspace appears endless. As the GSP demonstrates, there are tremendous opportunities for education and training at the K—12 level. There are also opportunities here for higher education, particularly in distance education or cross-cultural education requirements. Cyberspace technology is opening many new and effective education options at all levels; schools and colleges that do not take advantage of them will be losers in the world to come.

There is a downside, particularly for schools and colleges that do not take advantage of this technology, for they may be put in the "loser" category by students, parents, and employers. In higher education, think of the potential disruption created by first-year students accustomed to using computers and the Internet if professors on these campuses are not incorporating these tools in their instructional activities.

Think of the potential disruption created by first-year students accustomed to using computers and the Internet if professors on these campuses are not incorporating these tools in their instructional activities.

A New Kind of Engineer

"Manufacturing needs a new kind of engineer, highly able and motivated to drive toward practical end results, not easily sidetracked by unnecessary detail, and eager to seize and build on opportunities for corporate success." So starts an article by Professor John Crookall of the Cranfield Institute of Technology in Bedford, England. He then describes how he and his colleagues employed standard reengineering techniques that have been used in the U.S. and elsewhere to revamp their engineering curriculum to meet the requirements for contemporary industrial employment. Starting with an in-depth strategic planning exercise that all concerned bought into, Crookall and his colleagues developed a clear mission statement, identified the key assumptions, stated their core business succinctly, and generated a key issues list including methods of monitoring progress along a set of performance measures. Through these processes they were able to identify an entire new set of student recruitment criteria, new methods of soliciting industry support and attracting other kinds of aid, and developing the all important continuous improvement program. The result was a reengineered engineering education process.

[Crookall, J. R. (April, 1994). Engineering the integration of manufacturing education and industry. *Journal of Manufacturing Systems*, 13(l), pp. i-iii.]

Implications

By adapting industrial engineering and planning techniques, the British Cranfield Institute reengineered their entire educational process and organization. Planners in institutions of higher learning as well as those in the K-12 systems could benefit from applications of these tools that have proven successful in the business environment.

* * *

ECONOMIC

A. G. Stell Kefalas
Department of Management
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The New Wealth of the Nation

Traditionally, economic activity has been described as an *exchange process* between a possessor of something (the supplier) and a demander of something (the demander). Closure occurs when equilibrium (a mutually acceptable price) is reached.

This exchange process is universal. It describes economic behavior between two people, two villages, two countries—in fact, any two exchange participants. In the case of two countries of the Global Village, the end result of the exchange process must leave both parties better off. Thus after the exchange, let's say of Toyota automobiles for Intel chips, both Japan and the United States must feel they are better off after the exchange than they were before it. The unit of measurement of this state of feeling better off before than after is what is known as wealth.

To measure this form of wealth, nations developed an accounting system known as the balance of payments. This system of accounting of international transactions worked very well as long as the majority of the exchanges among countries were goods and services that were produced by firms residing within the country's national boundary. Simply speaking, everything that was loaded aboard a ship leaving New York for Tokyo was a U.S. export. Everything that was unloaded from a Boeing 747 landing at JFK from Tokyo was an American import from Japan. The difference between the sum of exports and imports was the so-called Trade or Merchandise Balance.

Using this conventional system as a yardstick, governments and international financial markets determine the value of one currency over another. Theoretically, a country with chronic deficits will experience a depreciation of the value of its currency, while a country with chronic surpluses will experience an appreciation of its currency (i.e., it will receive more units of the other country's currency for every one unit of its own currency). The increase in the demand of the surpluses-country's currency will drive up its value and make its exports more expensive, thereby cutting down demand for its products, which will eventually lead to lower exports, and consequently lower demand for its currency, with the end result the disappearance of its surpluses. By the same token, mutatis mutandis (with the necessary changes) and pari passu (at an equal rate), the deficit-country's products will be made cheaper while its imports will be made more dear, thereby increasing its exports and decreasing imports, with the end result that the deficit will disappear.

In 1944, the Allied Forces met in Bretton Woods, New Hampshire, a meeting that was orchestrated by the U.S. and directed by the brilliant British economist John M. Keynes. The backbone of this system of balancing payments was the U.S.'s willingness and ability to exchange every Troy ounce of gold for $35. In 1971, when the demand for gold far exceeded its stock, the U.S. "closed the gold window." Today, under the free floating exchange rate system, governments are not as successful in managing their currencies as they used to be. The U.S., for example, has been running a chronic trade deficit since the early 70s. Yet its currency was still very strong until the Group of Seven decided in the Plaza Agreement in 1984 to "lower" the price of the dollar in the hope that the U.S. would be able to export more and import less and thereby eliminate its deficit. Alas, as we know, deficits are like lobster traps: it's exceedingly easy to get in, but very difficult to get out.

The System of National Accounts (NSA) is now in place for measuring the wealth creation process among nations. When the conventional balance of payments framework was designed it was *countries* trading among themselves. Today, it is more apt to be *companies* that are trading among themselves. The unit of analysis has shifted from the country per se to the so-called Multinational Company (MNC).

When the conventional balance of payments framework was designed it was *countries* trading among themselves. Today, it is more apt to be *companies* that are trading among themselves.

Below is a brief description of four alternative frameworks to compare the U.S. international picture. The first two frameworks in the table are

> **How do these acts by governments that are triggered by the international transactions balance affect education?**

Residency-Based Frameworks. These approaches are what the U.S. Commerce Department examines. The next two approaches are Ownership-Based Frameworks and are proposed by the National Academy of Science and the Council on Foreign Relations respectively.

The first framework, Cross-Border Trade in Goods and Services, the Standard Balance of Payments Accounts used today, shows a deficit of $28 billion for 1991. The second framework, Alternative Residency-Based Approach, which includes cross-border trade and net sales of company affiliates, gives the U.S. a trade balance of $24 billion. The same figure is given by the fourth framework, the Council on Foreign Relations proposal. The third framework, the National Academy of Sciences proposal, gives the U.S. the best picture of all: a whopping $164 billion surplus!

[Kudlow, L. (1994, May 6). Gold key to dollar-yen mystery. *Wall Street Journal*, p. A14.]

Implications

The various frameworks used to compare economic performance documents the increasing permeability of national borders and the trend toward a global economic village. This trend is and will continue to be a driving force as we enter the 21st century.

On a more immediate timeframe, what difference does it really make what yardstick is used to compare national economic performance? The international community's efforts to "help" the U.S. solve its balance of trade deficit have had thus far virtually no effect. Despite the depreciation of the dollar to ever lower levels against the main currencies, U.S. exports rose slightly while U.S. imports did not budge at all. In a desperate attempt to prop up the sliding dollar, 17 central banks around the world, including the U.S., launched a heavy dollar buying initiative. Today the dollar is hovering close to 100 yen level, which is seen by some in the financial markets as a kind of threshold below which lies a major rout for U.S. stocks and bonds.

How do these acts by governments that are triggered by the international transactions balance affect education? First, teaching our youth the alternative frameworks instead of the out-of-date conventional one, will make them more realistic business people, educators, and, of course, legislators. Second, efforts to attract currency into a country involve raising interest rates, which in turn affects federal and state receipts and consequently allocations for education, hitting the K-12 systems and higher education in their basic budgets and in their proposals for the future. Understanding the four frameworks may help educators anticipate and prepare to meet that future.

Comparison of U.S. International Economic Performance Under Different Frameworks (1991, Billions of Dollars)

	Residency-Based Frameworks		Ownership-Based Frameworks	
	Cross-Border Trade in Goods and Services	Alternative Residency-Based	National Academy of Sciences	Council on Foreign Relations
US export sales	581	632	816	2,523
US import sales	609	608	652	2,499
Balance	-28	24	164	24

Modified from *Survey of Current Business*, U.S. Commerce Department. December 1993, p.51.

* * *

ENVIRONMENT

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Seeing Complex Environmental Decisions

In the "olden days," environmental problems were tackled piecemeal with little thought for any strategy other than "command and control" (the regulatory agency commanded, the environment users responded through control). The world of environmental decisions was so much easier when a policy group could focus on small parts. Problems of water quality were separated from problems of air; problems of health were separated from concerns over cost; problems of engineering feasibility were separated from issues of human values.

Times are changing. The changes can be seen both in the complexity of more recent environmental decisions and in the structure of the community charged with setting policy. Scientists have mounted an assault on simplistic views of the environment. They've insisted that environmental solutions must take into account entire systems of media (air, water, soil). Otherwise, the problems simply will be shifted rather than solved. Philosophers and lawyers have argued that environmental decisions must recognize different ideas about ethics, philosophy of law, rationality and human values. From every front comes a cry for increased awareness of the implications of environmental decisions for industry and the economy. And just to muddy the waters a bit, there is a backlash against false claims of overconfidence or underconfidence in the predictions of environmental science. The policy community is confronting uncertainties and the problem of how they might be brought into decisions without crashing the entire process of cooperative environmental improvement.

The policy community is confronting uncertainties and the problem of how they might be brought into decisions without crashing the entire process of cooperative environmental improvement.

All of this makes for a new regulatory climate. Large mathematical models of the environment have come on-line, showing the connections (however poorly understood) between changes in one part of the environment and changes in all other parts. These models allow society to "explore" the effects of policy decisions on the environment and on the economy, but carry with them requirements of computer literacy and some familiarity with scientific ways of presenting information. A wider range of views on policy is appearing in public decisions. Industry representatives, citizens' groups, environmental activists, scientists, philosophers, politicians, and lawyers are being brought together to find workable solutions. The older idea of command-and-control is being compared against visions of market-driven decisions, tax incentives, and public education, all with an eye towards voluntary action. Environmental decision makers are struggling to unify these disparate pieces of information, these differing perspectives on human values and proper standards of reasonable (and caring) decisions. This is to be applauded both because it brings more justice into the world and for its recognition of the fact that the environment really IS this complex. But the burden is on society to cope with this new complexity without letting the environment decay while we find our footing.

[Cole, L. (1993). *Element of risk: The politics of radon.* Washington: AAAS Press; Cranor, C. (1993). *Regulating toxic substances: A philosophy of science and law.* Oxford: Oxford University Press; National Commission on the Environment. (1993). *Choosing a sustainable future.* Washington: Island Press; Office of Technology Assessment. (1994). *Industry, technology and the environment.* Washington: U.S. Government Printing Office; Research and Policy Committee. (1993). *What price clean air? A market approach to energy and environmental policy.* New York: Committee for Economic Development; White, J., (Ed.). (1992); *Global climate change: Linking energy, environment, economy, and equity.* New York: Plenum Press.]

Our educational system must respond to the challenge of creating students capable of working in this complex "environment" of decisions.

Implications

Our educational system must respond to the challenge of creating students capable of working in this complex "environment" of decisions. Educators should focus on six areas in which skills must be mastered:

1. Students must be able to use computer visualization in exploring policy options and their effects on all aspects of the environment, society and the economy. The National Science Foundation is committed to supporting this effort.
2. Students must be taught to work in interdisciplinary teams, working cooperatively with individuals from a wide range of backgrounds and intellectual perspectives (science, philosophy, technology, economics, theology, etc.).
3. Students must be taught how to use complex environmental models to interact with the environment itself; to use the models as a tool for engagement rather than separation from the environment. There is a danger that the increased intellectual complexity of environmental thought will leave less time for hands-on environmental exploration and action. If that happens, the student, society, and the environment will suffer.
4. Teachers should use a case study approach in environmental courses. Case studies allow students to explore a single environmental issue from many perspectives (science, math, engineering, politics, sociology, etc.). They also give students insights into the practical constraints on policy decisions.
5. We need to incorporate groups from industry, government, advocacy positions, etc., into the educational process. Students need to be exposed to the many sides of debate at an early age, rather than to questions raised from only one perspective (such as ecology) and then thrown unprepared into a more complex forum where perspectives clash.
6. Teachers themselves may need to think in terms of class exercises involving team teaching, drawing together teachers from several disciplines and ideological slants.

* * *

POLITICAL

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Linking High School Preparation to Work and Careers

Labor Secretary Robert Reich laments that the U.S. has "one of the worst systems for getting people from school to work." He holds promise for the new School-to-Work Opportunities Act that provides up to $300 million in state and local grants to develop better programs for high school students not college-bound. Programs include:

- career academies, devoted to technical training in specific occupational areas (e.g., health, electronics) and generally conducted in cooperation with community colleges
- apprentice programs entailing a related se-

quence of courses, and generally conducted jointly by schools and employers

- restructured vocational education programs providing participants with a sampling of different jobs.

The biggest shortcoming of these programs is businesses' reluctance to participate; when companies do cooperate, they rarely offer more than three internships at any given time. Success is more likely when students start early—before they give up and drop out, and when specific teacher-student collaboration is continuous over several years.

[Editors. (1994, April). Shaping schools for the world of work. *State Legislatures*, p.7.]

Implications

So far, U.S. college-bound students get most of the breaks and support. Perhaps it is worth borrowing a page from European countries where vocational education and apprenticeships fare especially well. In addition, K-12 educators in the U.S. need to monitor the School-to-Work Opportunities Act, which holds out promise.

Perhaps it is worth borrowing a page from European countries where vocational education and apprenticeships fare especially well.

How Are Schools to Deal With Multi-Cultural Diversity?

Increasing immigration and a profusion of varying cultural backgrounds vastly complicate providing public education. In Arlington, Virginia, 31% of the county's population are minority, and account for 60% of public school enrollment. Minorities reportedly are comfortable with schools in which they constitute the dominant majority. Should schools simply ride out intermittent racial disparities by providing separate but equal facilities? The Supreme Court continues to say NO. Ethnic imbalances in schools resurrect charges of racism and renew controversies over busing or boundary adjustments to improve ethnic balance.

[Ehrenhalt, A. (1994, April). Community, schools and the melting-pot dilemma. *Governing*, pp. 7-8.]

Implications

Massive demographic upheaval poses special burdens in fairly and equitably providing all public services; education happens to be one of the first universal services heavily hit. Resurfacing tendencies toward racial separatism, and growing anti-immigration sentiment at a time of increasing numbers of immigrants into the U.S. will pose major school integration problems for many decades.

Resurfacing tendencies toward racial separatism will pose major school integration problems for many decades.

Education Funding Prospects May Be Dimming

Pressure for education services increases while political clout for funding them decreases. The baby boom echo and influx of immigrants are expected to increase school enrollment from 46.2 million in 1990 to 52.4 million by 2000. Decline in the proportion of school children to total population, plus increase in American older population signals waning political pressure and interest in the 5-17 year age group. School bond referenda face tough going.

Two expense factors bear watching—physical facilities and teachers. The surge in enrollment escalates the demand for additional and/or upgraded facilities. Though construction outlays as a proportion of all education spending increased from 6% in the mid-1980s to 8 % in 1991, a good deal of the additional expenditures went for asbestos removal/control. Limited construction and overcrowded facilities loom.

Teacher-pupil ratios, a supposed indicator of enhanced education outcome, have markedly declined from 26 pupils per teacher in 1960 to 17 pupils in 1990. Spending for teachers now ranks as the largest education expenditure.

Simmering controversies inherent in all of this are aggravated by the property owners tax revolt. The trend has been toward capping or reducing property taxes as a source of funding.

[Petersen, J. E. (1994, April). Why schools are tumbling down: The fiscal story. *Governing*, p. 90.]

Implications

Older Americans with changed priorities will become less interested in school construction and more interested in securing their own public needs and retirement. The adult population will deny funds to support lower teacher-pupil ratios because no improvements can be cited. Education spending increasingly will have to prove itself.

What Can Be Done to Attract Best Qualified Teachers?

Merely 1% of Bachelor-degree graduates from U.S. elite colleges, and only 7% of Phi Beta Kappa recipients went on to teach in public schools during the period 1970-1990. In marked contrast, high proportions of these elites went on to law, medicine and business careers. Average 1991 college board scores for these groups ranged from 1157 to 1222 (compared to the mean of 873). Students enrolled in education during the same year scored only 847, an average score that ranked third from the bottom among all majors.

[Harwood, R. (1994, January 29). Who earns what and why. *Washington Post*, p. A19).]

Implications

When the best minds are not overwhelmingly engaged in teaching our country's most vital asset, its youth—and when that task, collectively, may be relegated to the least capable—something is askew. Japanese teachers, it is often pointed out, receive generously large salaries and enjoy great respect, with the result that teaching jobs in Japan are among the most coveted positions. They must be doing something right—Japanese students consistently score highest in test and IQ scores compared to students in America and other countries. There must be a lesson to be learned here.

Teaching jobs in Japan are among the most coveted positions.

Does a College Education Pay in the U.S.?

An estimated 75% or 90 million workers in the U.S. never received a college degree. The financial comparisons are compelling:

- median pay males: with college degree, $38,300; without, $25,000
- median pay females: with college degree, $28,300; without, $17,500
- average net household worth: with college degree, $72,373; without, $33,254.

For those who go on to complete advanced degrees, the results are even more compelling:

- median weekly earnings males: high school grads, $480; bachelor's degree, $736; professional/doctoral degree, $1,000
- median weekly earnings females: high school grads, $337; bachelor's degree, $545; professional/doctoral degree, $811.

[Belton, B. (1994, February 15). No degree? Welcome to the wage gap. *USA Today*, p. B-1.]

Implications

Education level drives disparity in wage levels. Disparity between males-females continues. With history as a guide, the U.S. will eventually offer universal free higher education to all. Disparity in wage levels, keyed to the degree of educational attainment and to gender differences, will continue to fuel political dialogue.

Three Year College Fulfillment

There is nothing sacrosanct about the four-year college program. American colleges fell into this practice after Harvard's adoption in 1655 that was copied from Cambridge University's 4-year formula (a few years later Cambridge reverted to a 3-year curriculum—and follows it to this day).

A growing number of colleges offer 3-year course tracks, at least for some programs—Middlebury, Oberlin, Upper Iowa University and Albertus Magnus College among them.

Opponents contend that the 4-years provide additional time for emotional maturation and educational growth; there simply is more to learn.

Number of college bound high school students taking advanced placement courses grew 13%—566,036 to 640,000 between 1992 and 1993.

[Leslie, C. & Springen, K. (1994, March 28). Three years and out: Education—one way to cut college costs. *Newsweek*, p. 53.]

Implications

Some condemn the current trend for institutionalizing and prolonging matriculation—and adolescence. A serious problem is the simple one of rising costs and increasing inability to pay for additional education. Taxpayers, begrudgingly, will have to pick up a bigger part of overall costs. Three-year curriculums and other creative changes are needed to get education costs down. One ultimate solution, with Europe as a guide, involves state takeover of most/all higher education cost.

Three-year curriculums and other creative changes are needed to get education costs down.

COMMENTARY

Susan Otterbourg
Delman Educational
Communications

The Wingspread Report

According to the Report of the Wingspread Group on Higher Education, *An American Imperative: Higher Expectations for Higher Education*, 1993, a "mismatch exists between what American society needs from higher education and what it is receiving," particularly as regards the quality of undergraduate preparation.

The report specifies three fundamental barriers that currently impede change:

- isolation of higher education from its greater community
- policies and practices that recruit a broad range of entrants and then "weed" them out or fail to provide support necessary to encourage students to complete their higher education experience
- erosion of public confidence in higher education due to higher education's institutional emphasis on advanced study and research as opposed to teaching, and public dismay over balance between costs and results.

A "mismatch exists between what American society needs from higher education and what it is receiving."
Wingspread Group

Participants of the Wingspread Group Conference saw three fundamental issues central to overcoming the barriers outlined above: taking values seriously, putting student learning first, and creating a nation of learners. To do this, higher education needs to:

- model the values it espouses, for example, by graduating students who are more sensitive to the needs of their communities, more competent in their ability to contribute positively and productively to society, and more civil in their habits of thought, speech and action
- put student learning first by focusing on the goals and assessment related to student output (achievement) as opposed to input (faculty credentials; facilities; credit hours; library acquisitions)
- create a nation of learners—a seamless system from kindergarten through college/university

Faculty, staff, student, trustees, and state legislators need to:

- conduct self-evaluations in relation to their institution's accomplishments academically, professionally, and in their involvements with K-12 schools
- make the resulting assessment the basis of a publicly announced strategic plan to ameliorate deficiencies
- develop and deliver new entry and exit standards and curricula that will result in graduates equipped to assume positions of responsibility in society.

Higher education needs to create a seamless system from kindergarten through college/ university.

The Wingspread Group agreed that for higher education to regain the confidence of the public, it needs to encompass *all* of education and must abandon its isolation from the larger community. For example, higher education can be a major vehicle to positively impact school reform efforts through training teachers and administrators, coordinating seamless curricula, implementing broad-ranging continuing education to guide and support educators to better understand and learn "how to" incorporate learning and skills into the management and delivery of instruction, and participating in collaborative efforts in which professionals at all levels can work together and with other community groups to meet the educational needs of students (kindergarten through college).

To meet these challenges, the Wingspread Group argued that the roles, responsibilities, structures, attitudes and actions of higher education must change. Helping higher education to understand that its business is *all* of education, not just higher education, calls for reducing the isolation of higher education from its larger community and encouraging a dialogue, coordination, shared goals and objectives, and collaboration between educational levels. Emphasis must be placed on (a) what students should know and be able to do whether it be in kindergarten, grade six or grade 12; (b) defining standards of entry *and* exit for higher education; (c) improving both the theory and practice of teaching learning; (d) recruiting and educating more effective teachers and administrators at all levels; (e) reducing the barriers to inter-institutional transfer among institutions of higher education; (f) immersing students in an environment that is more directive, supportive and demanding in order to support student achievement; (g) reducing the imbalance between research and teaching; and (h) exploring the implications for college admissions practices of six National Education Goals.

* * *

COMMENTARY CAPSULES

Blanche Fried Arons
Associate Editor
On the Horizon

New York Times, 2/27/94: Little Dishes Promise a Feast.

The Digital Satellite System is a clever mix of new technologies by Hughes Aircraft. Reporter Hans Fantel likens this process of 150-channel data compression to "concentrated orange juice: reduced for shipment, reconstituted at point of consumption." Its high power satellite signals ordered by remote control can be received on an 18-inch disk, on sale for $699; subscription costs are competitive with cable. The high resolution system for the electronic distribution of text is suitable for library reference books and textbooks, making these materials available in remote areas.

New Yorker Magazine, 4/4/94: Discards, Annals of Scholarship.

Nicholson Baker reports on transfer of libraries' index card material to online catalogues. Information on millions of cards is being converted by workers not necessarily library-trained nor adept at adjudication of perplexing classification questions or subtleties in selecting scholarly, handwritten notes. Libraries are recycling the cards for scrap, not keeping any for posterity. Baker says entries will now contain "frozen" misinformation, less rich in cross-references and subject headings, lacking local character, stripped of whole classes of specific historical information such as original price of book, acquisition date, and the idiosyncratic enthusiasm expressed in handwritten notes of thousands of perfectionist scholars. However, library index information now becomes easily accessible world-wide; online entries do not grow mold, are less likely to be vandalized, do not use up valuable floor space. Information acquisition will be updated to fit the education tools of the 21st century.

Knight-Ridder Newspapers, 6/16/94: *Government Is Going Private.*

L. A. Reason Foundation policy analyst John O'Leary says Libya's Quaddafi has solved inefficiency in its state-owned camel-raising program; the answer—privatization. Privatization, according to O'Leary, has rescued England from its economic black hole of the 70s, set the former iron-curtain countries on their way toward economic stability, and begun to infringe on the entire American service delivery scene. President Clinton and Vice-President Gore fully endorse competitive contracting that results in benefits for citizens-taxpayers, in areas where government formerly held monopolies. Even government employees' unions are "grudgingly becoming part of the process." At the most, government services will be privatized; at the very least, governmental functions will involve competition through choice.

The education connection is clear. President Clinton has endorsed the idea of private management of public schools. Cities such as Baltimore, Chicago, and Philadelphia have already ventured into private-sector partnerships, including management by colleges and other nonprofit groups and even for-profit management of public schools. To paraphrase O'Leary, "The camel's nose got under the tent." Educators may find themselves riding the humps.

Educators may find themselves riding the humps.

IN THE 'NET

Bernard Glassman
Pragmatix:
Information Design

Tollbooths on the Highway:

Good News or Bad News?

It is time to face the fact that colleges and universities, where the vast preponderance of Internet talent, experience and innovation has resided for 30 years, may soon, may already, be left panhandling by the side of the information highway. If planners and administrators do not address the problem directly, billions in potential revenues will land in the hands of the MCIs, the AT&Ts, the Rupert Murdochs and the Ted Turners, not to mention the hundreds of skilled but frustrated entrepreneurs who will leave the schools' halls to start up firms of their own.

Colleges and universities may soon, may already, be left panhandling by the side of the information highway.

Take Mosaic, take Cantor and Seigal, take the NSF, take the NBA and take MTV. Mosaic, reviewed elsewhere in this issue, was developed by programmers at the National Center for Supercomputing Applications at the University of Illinois Urbana campus. Already, two of the key Mosaic programmers have been hired away to develop Mosaic: the Next Generation (my name, not theirs. I don't know what it will be called). This is a classic example of how a commercial firm has snapped up the software and the talent developed by academe, and proceeded to profit from its existing market, its R&D effort, and its name-familiarity.

Cantor and Seigal. Who? Cantor and Seigal are the husband-and-wife law firm that recently flooded the 'Net with a promotion for their services. Contact them, and they'd help you enter the Green Card lottery. Yes, the government sponsors a lottery of the hard-to-get green cards to make access more fair. Never mind that you don't need a lawyer to enter. The virtual torrent of promotional announcements jammed the 'Net with messages that Cantor and Seigal didn't have to pay for. Professional dialogue in thousands of newsgroups was hampered not only by the ads but by the firestorm of outraged protest messages that they engendered. Although they were trespassing on valuable electronic campuses, educators were powerless to stop them or the electronic riot that followed and still continues in some quarters. Bottom line: there is as yet no way to keep the computer screens of academe from being involuntarily invaded by commercial messages. Footnote: Cantor and Seigal are so proud of their ability to multiply a commercial message 20,000,000 times that they have announced they are going into the Internet advertising business.

Now the NSF is considering turning the backbone of the 'Net over to commercial carriers, who will doubtless want to charge the academic world.

Take the NSF. The National Science Foundation subsidizes university access to the 'Net in return for, among other things, schools' assurance that they won't use the system to make money. Now the NSF is considering turning the backbone of the 'Net over to commercial carriers, who will doubtless want to charge the academic world. Will schools be able to pass those costs through, not just to the students and faculty, but to the businesses to whom they are providing commercial access? I don't know the answer to the question. But I do know that it is incumbent upon us all to eavesdrop, at least, on the dialogue about how the burden, and the benefits, of the commercialization of cyberspace, can be shared.

Now take the NBA. When thousands of people gather for a game, or tune it in on television, advertisers pay big bucks for visibility. The same is true of the NCAA. And schools benefit. Yet in a parallel circumstance, when the "professional" providers, the CompuServes, America Onlines, and the like, provide corporate visibility, they get paid. So why is it that schools are the buyers and not the sellers in the economy of access?

Educators and their institutions [need to be] alert to opportunities and actual financial impact of unobtrusive intrusions and takeovers of their corner of cyberspace.

And finally, MTV. An ex-MTV vjay spent a lot of time and money creating a site where MTV fans could gather electronically and discuss music. Free. He called it MTV.com. On several occasions he says he offered the people at MTV the chance to become an official sponsor, and on several occasions they said they weren't interested. Then the Internet got hot. And MTV sensed a trend—away from their programming. So they issued a cease and desist order and are now suing this kid. What does that mean to your school? Well, just imagine that one of your more entrepreneurial staff members actually begins offering a service that someone else wants to offer commericially. Say, an e-mail to fax conversion service. Free faxes to any exchange that participating schools could call for free. (It's already available in many cities all over the world, including dozens in the US and Canada. Free.) Now, say that this same service were one that your commercial backbone provider wanted to get paid for. So you log on one morning to a dead monitor. An electronic cease-and-desist order. No Internet service until your school stops being competition for the megacorporations. So much for the warm and fuzzy virtual community.

If educators and their institutions are not alert to the possible lost opportunities and actual financial impact of unobtrusive intrusions and takeovers of their corner of cyberspace, they may not be alone. But, to rewrite Kipling's line, "The saddest word of tongue, or pen, or keyboard are these: It might have been."

Readers with e-mail accounts:

On the Horizon is now on-line

On the Horizon has established 'Horizon List,' an Internet e-mail list, to promote discussion about emerging issues, trends, events in the social, technological, economic, environmental, and political sectors of the macroenvironment (national/global levels) that will affect education—elementary and secondary schools as well as colleges and universities.

Much of the discussion will center on articles that have appeared in *On the Horizon*. Discussion may also center on what articles we should publish in future issues of the newsletter. And we may post some articles focusing on the signals of change we see in the macroenvironment to get your reaction as to their implications for K-12 schools as well as for colleges and universities world-wide.

The list is unmoderated, and is open to anyone with an e-mail address. Messages sent to the list are automatically (by a program called Listserv) sent to everyone who is subscribed to the list.

How to subscribe

To subscribe to Horizon List, send the following message to LISTSERV@GIBBS.OIT.UNC.EDU :

subscribe horizon Your Name

Leave the subject line blank. For example, Pat Jones would subscribe by typing:

subscribe horizon Pat Jones

Once you have subscribed, you may post messages to the list by mailing them to HORIZON@GIBBS.OIT.UNC.EDU .

Archives and other commands

Listserv archives all messages posted to this list by month. You can request that Listserv send you any particular month of Horizon List. To access the archived files, send the following commands as the text of an e-mail message to LISTSERV@GIBBS.OIT.UNC.EDU :

To get the list of files for Horizon List, type:

index horizon

To get a specific file, type:

get horizon file_name

Note: file names are "horizon.9405" for May '94, "horizon.9406" for June '94, etc. Therefore, to get all messages posted during June 1994, type:

get horizon horizon.9406

To get a listing of other commands available from Listserv, type:

help

By August, articles from back issues of *On the Horizon* will also be available. Instructions on how to retrieve them will be posted to the list.

If you have problems or need additional help, please contact our Production Manager, Ruby Sinreich, at RUBYJI@GIBBS.OIT.UNC.EDU or at (919) 962-2517.

TOOLS

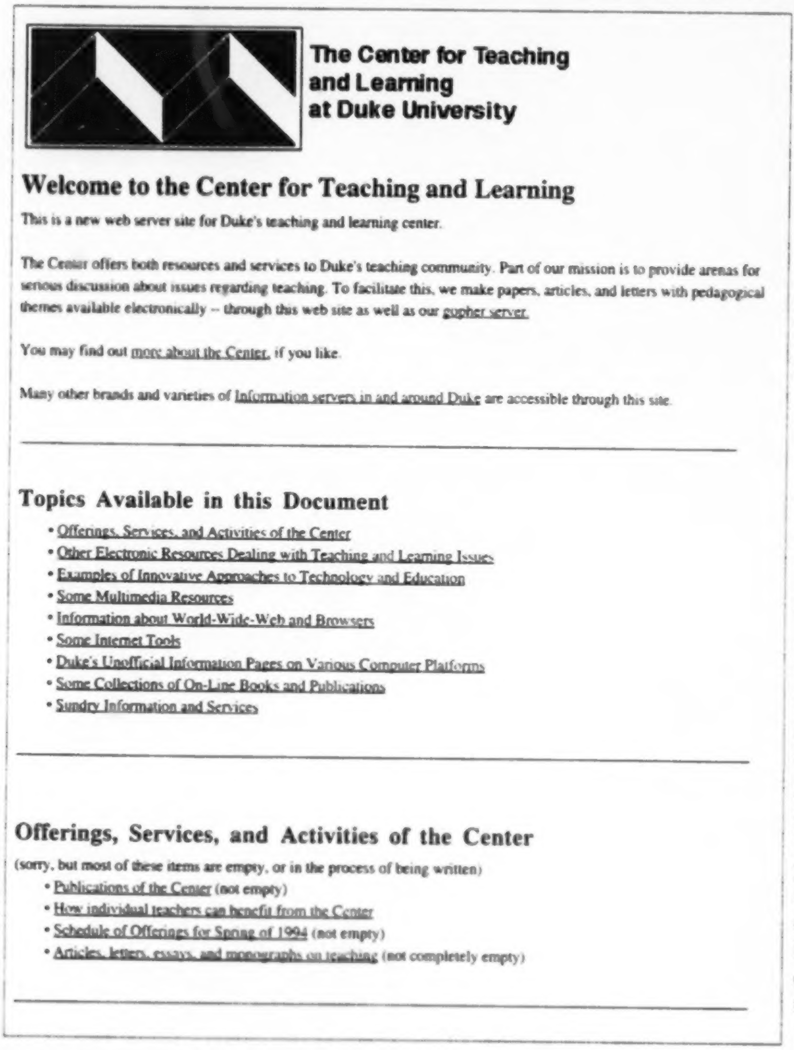
Bernard Glassman
Pragmatix:
Information Design

Mosaic brings the 'Net to life

With Mosaic, the screen comes alive.

It's not often that something comes along that makes me feel as if I'd rediscovered the joy of computing, but Mosaic is such a thing. I suppose the National Center for Supercomputing Applications (NCSA), its developer, had the program's looks in mind when they gave it the name Mosaic, because a typical screen of information may contain any number of tile-like images among the text. But I prefer the biblical associations of the name—if the ten commandments were to be handed over to us electronically, at this stage in the evolution of communication technology, I do not doubt that they would come via Mosaic.

Mosaic is a program that provides a graphic, mouse-friendly window on the Internet, specifically a way to use the World-wide Web software that is on virtually every university's computer. The central metaphor is a "page" of textual information. Without Mosaic, you'd see just a page of text, some of it in bold letters. Using your tab key, you'd hop from one bold phrase to another, causing each to be highlighted in succession. Hit the return key, and that highlighted bold phrase would connect you to a document, a set of documents, or even a program anywhere else on the Internet. Say the page of text is one of the ones I'm currently creating for some client universities, an alumni newsletter. Say the article is a brief paragraph on how the football team did this past season, but it mentions next season's schedule in bold. If you were to tab to the word "schedule" and hit the return key, you might be taken to a new page with all of the coming season's games. Tab to the name of an opponent, hit the return key, and be taken to a fact sheet about the team. This is what is meant by "hypertext."



The Center for Teaching and Learning at Duke University

Welcome to the Center for Teaching and Learning

This is a new web server site for Duke's teaching and learning center.

The Center offers both resources and services to Duke's teaching community. Part of our mission is to provide arenas for serious discussion about issues regarding teaching. To facilitate this, we make papers, articles, and letters with pedagogical themes available electronically -- through this web site as well as our gopher server.

You may find out more about the Center, if you like.

Many other brands and varieties of Information servers in and around Duke are accessible through this site.

Topics Available in this Document

- Offerings, Services, and Activities of the Center
- Other Electronic Resources Dealing with Teaching and Learning Issues
- Examples of Innovative Approaches to Technology and Education
- Some Multimedia Resources
- Information about World-Wide-Web and Browsers
- Some Internet Tools
- Duke's Unofficial Information Pages on Various Computer Platforms
- Some Collections of On-Line Books and Publications
- Sundry Information and Services

Offerings, Services, and Activities of the Center

(sorry, but most of these items are empty, or in the process of being written)

- Publications of the Center (not empty)
- How individual teachers can benefit from the Center
- Schedule of Offerings for Spring of 1994 (not empty)
- Articles, letters, essays, and monographs on teaching (not completely empty)

With Mosaic, the screen comes alive. Where there were just team names, there could be the team logo, in color. Click on the logo, and pull up a full-screen photograph of the team, or a photo of the coach. Click on a reference to a last-second field goal that saved the season, and see and hear a video of it, sent to you over the Internet in response to your click, and played for you by a small movie-playing utility that you have installed in the same folder/directory with Mosaic on your hard drive.

As the information highway on-ramps make their way into the high schools and local libraries, as more and more homes get the high-speed modems needed to carry the information over ordinary phone lines, think of what that Mosaic can mean for recruiting students and creating a virtual alumni association. At Duke, there is already a virtual Center for Teaching and Learning. Travel there via Mosaic, and you are presented with the page of text and picture shown at left. Brian Rubin, who developed the Center's page (it's called a "home page" in Mosaic lingo because it's the first one you see when you travel there via the 'Net) tells me that actually programming the page so that it would take users to all the places mentioned on it took him about half a day. I say "programming" but that's too grandiose a term. A page for Mosaic looks pretty much like an ordinary page of text, except that there is the occasional code that tells Mosaic the Internet address where it can find a picture to fill in automatically, or a database to take you to when you click on the underlined text.

The most disturbing thing about Mosaic is that it makes things so easy and interesting that you can forget there is a whole lot of cyberspace out there beyond its reach.

What about cost? Sounds like expensive software, right? Read carefully: As long as you have a direct Internet connection, everything else here is free. Mosaic is in the public domain. So are the little programs that play sounds and movies. If your school's computer center offers SLIP or PPP accounts to dialup users, you'll need a 14,400 baud modem and some other free software, and plenty of time to get everything working together. Commercial providers are offering SLIP and PPP (these are communications 'protocols' that fool the host computer into thinking that you are hardwired into the network rather than connected via modem) for as little as $20 a month, sometimes including unlimited connect time.

The most disturbing thing about Mosaic is that it makes things so easy and interesting that you can forget there is a whole lot of cyberspace out there beyond its reach. Soon, there will be so many home pages that you can travel to, and through, that the blue highways may begin to crack and grass may begin to grow up through them. Flashy home pages with lots of pictures and sounds will be more interesting than those that are even now being created by elementary school kids to record their class virtual field trips. Commerically produced pages with "adult" entertainment or online catalogs may get more attention than the conferences that are beginning to be created among inner-city activists to share ideas for grass-roots initiatives. I'd like to know that our students will be joining these conferences, and are being mobilized to help, rather than merely cruising the MTV home page. Who better than the schools to help make that happen?

* * *

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